# REPORT

of the

# SAN FRANCISCO WATER DEPARTMENT

FISCAL YEAR
1970-1971

ARTHUR H. FRYE, JR.
General Manager and Chief Engineer

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# JULY 1, 1970 TO JUNE 30, 1971

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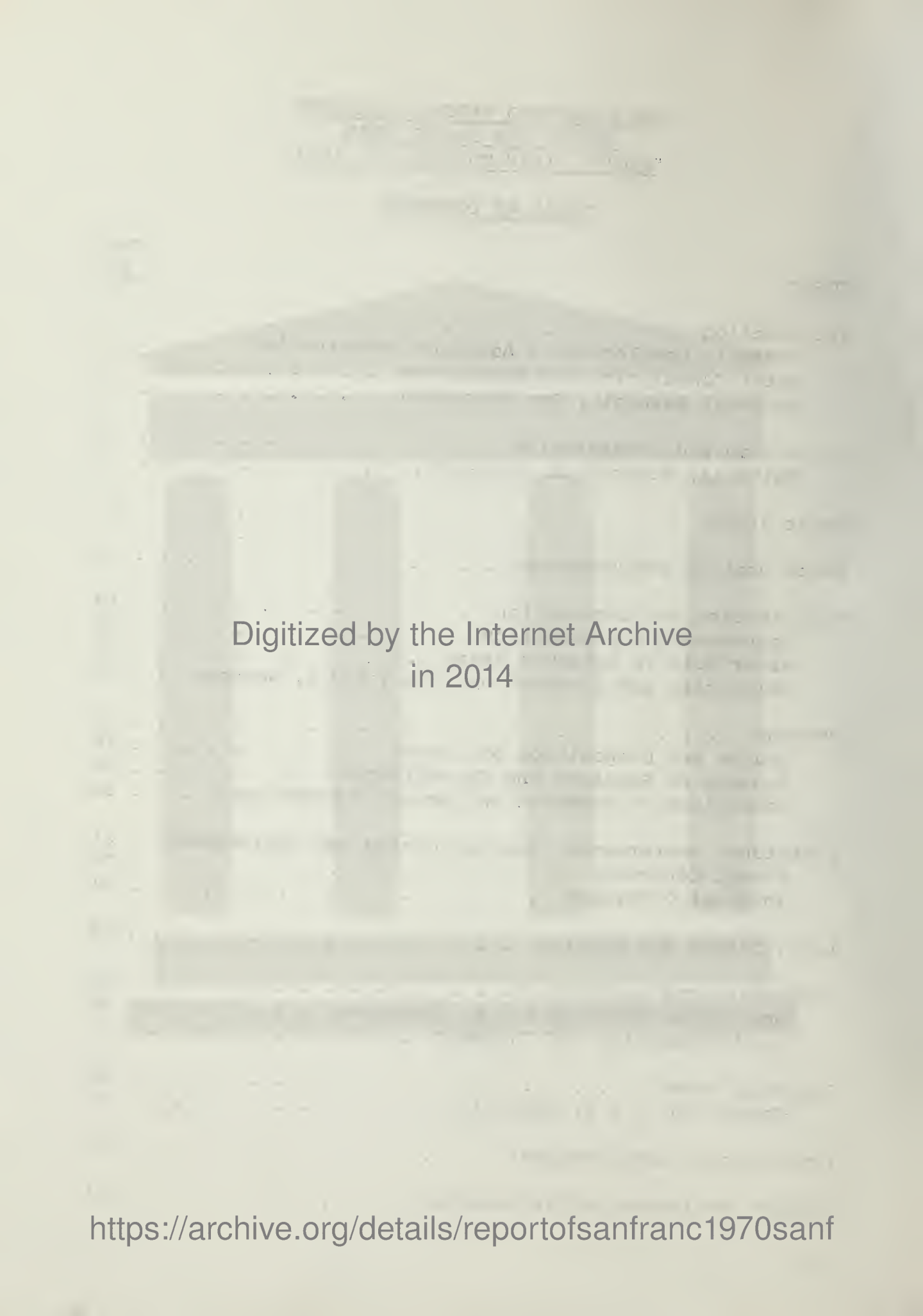
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# SAN FRANCISCO WATER DEPARTMENT

ARTHUR H. FRYE, JR.
General Manager and Chief Engineer

San Francisco's early growth required the City to seek and develop an adequate source of water in addition to local supplies being developed by Spring Valley Water Company. In carrying out this development the City became the first importer of water into the Bay Area. Even today, San Francisco is the only importer of water within most of the 500 square mile area presently served by the Water Department.

The San Francisco Water Department was created to take over the operations and properties of the Spring Valley Water Company when that privately owned utility was purchased on March 3, 1930. As a result of that purchase and the additional facilities built by the Department, the Water Department now operates watersheds, reservoirs, transmission and treatment facilities that deliver water to serve over 1,750,000 people living in portions of Alameda and Santa Clara Counties, most of the populated area of San Mateo County, and all of San Francisco County.

San Francisco's water supply system has been an essential element in the industrial development and community growth throughout the 500 square mile service area. Water consumption has increased 11.5% during the past five years, for an average of 2.75% per year.

In 1930 the systemwide consumption of water totaled 52.3 million gallons per day, with 49.2 MGD consumed in San Francisco and 3.1 MGD delivered to suburban areas. The later growth of former suburban areas into cities surrounded by new suburban areas has caused water consumption for the fiscal year 1970-71 to reach a new high of 243.6 MGD, of which 111.9 was consumed in San Francisco and 131.6 was delivered to surrounding cities and suburban users. This was a decrease of 1.9% from the previous year.

The Water Department is entirely self-supporting, paying from revenues for all operations, maintenance, improvements, taxes, bond interest and redemption (including the original $41,000,000 bond issue for purchase of Spring Valley Water Company). In addition, the Department does not receive

payment (approximately one and one quarter million dollars per year) for water furnished to tax supported San Francisco City departments. Even with the 15% increase in rates effective with meter readings after June 1, 1970, water is still being sold below the rates that existed in 1930 when the Spring Valley Water Company was purchased.

The objectives of the Department are to deliver to all consumers a safe potable water in adequate quantity and at adequate pressure; to comply with all standards set by appropriate state and federal agencies; to accurately measure, bill and collect for services to equitably distribute the cost of water service; and through continued planning and construction provide for the needs of present and future customers in our service area.

In 1962, the U. S. Department of Public Health reduced the recommended turbidity for public drinking water from 10 units to 5 units. In 1963, San Francisco's water supply was given only a provisional certification for use by interstate carriers (ships, trains, planes) contingent upon the active planning and construction of specific filtration facilities. Subsequent certifications have been "approved" based upon our progressive construction of facilities that assure water quality.

In October 1970, Crystal Springs Bypass ($8.6 million tunnel and $1.0 million pipeline - both 1961 Bond Fund projects) were put into service, delivering Hetch Hetchy water and filtered water from Alameda County sources directly to northern San Mateo County and San Francisco, thus completing another planned project to improve water quality.

San Andreas Water Filtration Plant, the remaining major project to assure the quality of our water supply, was 84% completed by June 30, 1971. This plant, scheduled for trial operation by the end of 1971, has been delayed by strikes affecting delivery of equipment and construction which will delay its completion into 1972.

## CAPITAL IMPROVEMENT PROGRAM

The Analysis of Water Demand, Supply and System Improvements, prepared by consultants, indicated the need during the decade through 1980 for capital improvements estimated to cost $126 million. Of this sum, approximately $60,000,000 should be funded by new Bond Issues for those projects whose

service life make it appropriate to distribute their cost over a number of years. The balance should be funded annually from revenues. An interim rate study was made and a 15% increase in water rates was made effective after June 1, 1970. A more detailed rate study was funded in the 1970-71 budget. A Professional Services Agreement for this study was certified in April 1971.

## UTILITY TAX

Within the past year the Water Department through three separate Ordinances has been charged with the responsibility of collecting a Utility Tax, Industrial Waste Surcharges, and a Sewer Service Charge.

The Utility Tax of 5% has been collected since October 1970 and is averaging approximately $50,000 per month. The Industrial Waste Surcharge became effective July 1, 1971. The funds have not been collected under this Ordinance since the Department of Public Works has not as yet established the formulas for the various industries. The Sewer Service Charge collections are scheduled to commence on October 1, 1971, but there is still a question as to the legality of levying this charge under the President's ninety-day freeze. Revenue from the Sewer Service Charge has been estimated to be about $1,000,000 per month.

The monies collected under the Utility Tax are placed in the General Fund whereas the charges collected under the other two Ordinances will be deposited in special funds under the jurisdiction of the Department of Public Works.

Following are additional details of the Water Department's operations:

Completion of Bay Division Pipeline #4 is essential to meet current demand through summer months and near future average demand. Design, funding and advertising for contract bids were accomplished for the final "Section C" (a 1961 Bond Fund Project) by the end of June 1971.

The 60-inch diameter Crystal Springs Pipeline No. 3 from Hillsborough to Millbrae (18,600 feet) was 92% complete at the end of Fiscal Year 1970-71 (a 1961 Bond Fund Project to deliver additional water to Northern San Mateo County and to San Francisco).

A $481,797 contract for constructing a 24" water main in the Hunters Point Area was completed and a Professional Services Agreement was awarded for design of a Hunters Point Reservoir. Both of these projects serve the Hunters Point area under Redevelopment.

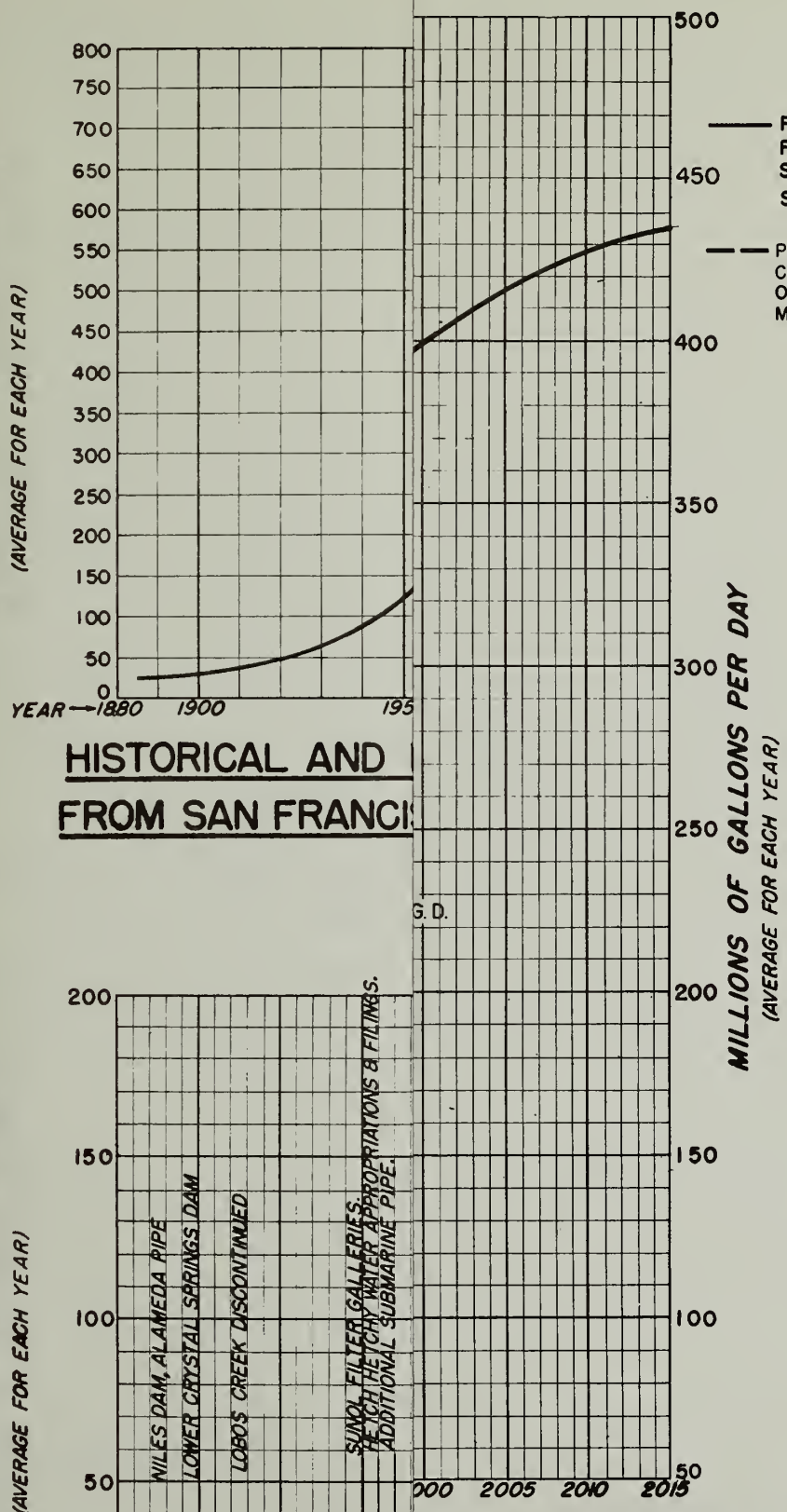
Market Street Beautification and BARTD Construction.. The replacement of water mains necessitated by these projects has cost more than preliminary estimates; an additional request for $423,000 was approved by the Board of Supervisors.

To meet State requirements for Dam Safety, Rehabilitation of Stanford Heights Reservoir (Mt. Davidson), a $1+ million rehabilitation was 86% complete at the end of the year. Repairs to the upstream face of Pilarcitos Dam were completed except for replacement of slope protection material. An informal contract for hauling material is planned for the next fiscal year.

## PLANNING

San Francisco's water comes from: reservoirs located within City owned and protected watersheds in San Mateo County; reservoirs and filter galleries located on City owned and protected land in Alameda and Santa Clara Counties, although this watershed extends into remote and primitive areas that are not owned by the City; and Hetch Hetchy reservoir on the Tuolumne River, with 459 square miles of watershed at an average elevation above 6,000 feet on which there is no year-round habitation.

With this heritage from the past, the Department employed a firm of consultants to make a study of land use and population patterns to estimate the future water demand within the service area, a study of the existing water supply, and needed system improvements to meet the expected demand. Separate studies were also made of the Department's building requirements and a study of land use of Water Department properties, to determine the best uses of these lands compatible with their primary function of providing water supply.




## LEGEND

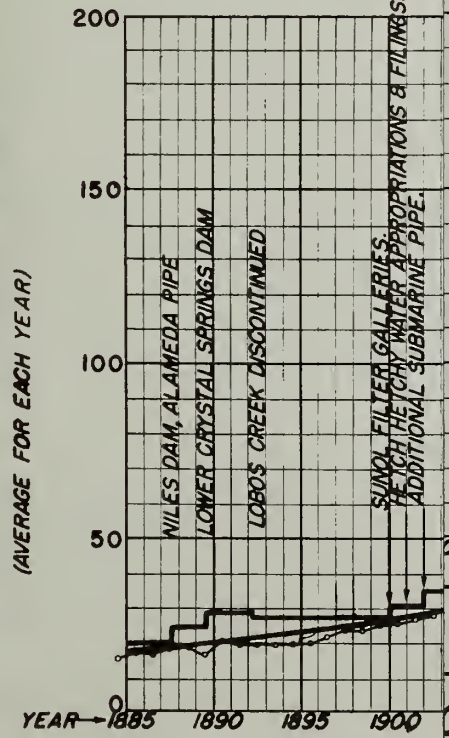
—— PREDICTED CONSUMPTION FROM SAN FRANCISCO'S SYSTEM WITHIN S.F.W.D. SERVICE AREA.

– – PREDICTED SUPPLEMENTAL CONSUMPTION IN AREA SHOWN ON EXHIBITS PRESENTED IN MARCH 1955 & APRIL 1936.

# HISTORICAL AND

# FROM SAN FRANCI

G. D.




*NOTE:–*

*Aqueduct development to meet water consumption includes only work for delivery to the peninsula reservoirs and consumers from main aqueduct, and does not include facilities for distribution therefrom.*

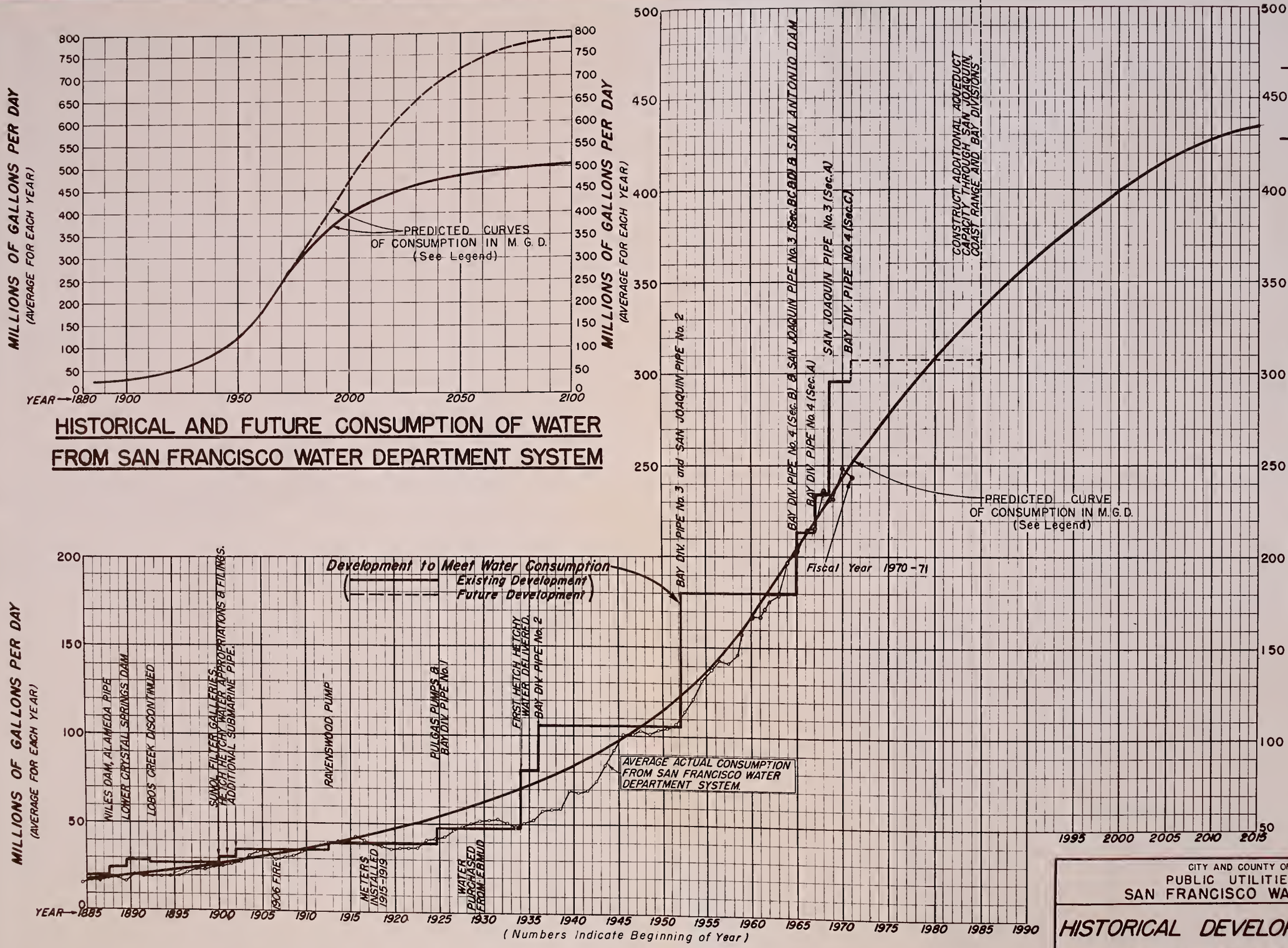
*Local production of record has varied from none to 102 M.G.D. (Average for one Year.) The average long range yield is about 55 M. G. D., and the safe yield, through historical 5-year critical periods, is about 40 M.G.D., including draft from carryover storage, and San Antonio Reservoir added to system in 1965*

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

# ORICAL DEVELOPMENT & PROGRAM FUTURE AQUEDUCT CONSTRUCTION

| | | | | |
|---|---|---|---|---|
| O'Brien | SCALE AS SHOWN | BY J. S. C. | DR. D. J. S. | DRAWING NO. X-1682D |
| J. V. Turner | | TR. D. J. S | CH. | |
| GENERAL MANAGER AND CHIEF ENGINEER | | DATE NOV 8, 1955 | REVISED 8-20-72 | |

## HISTORICAL AND FUTURE CONSUMPTION OF WATER FROM SAN FRANCISCO WATER DEPARTMENT SYSTEM

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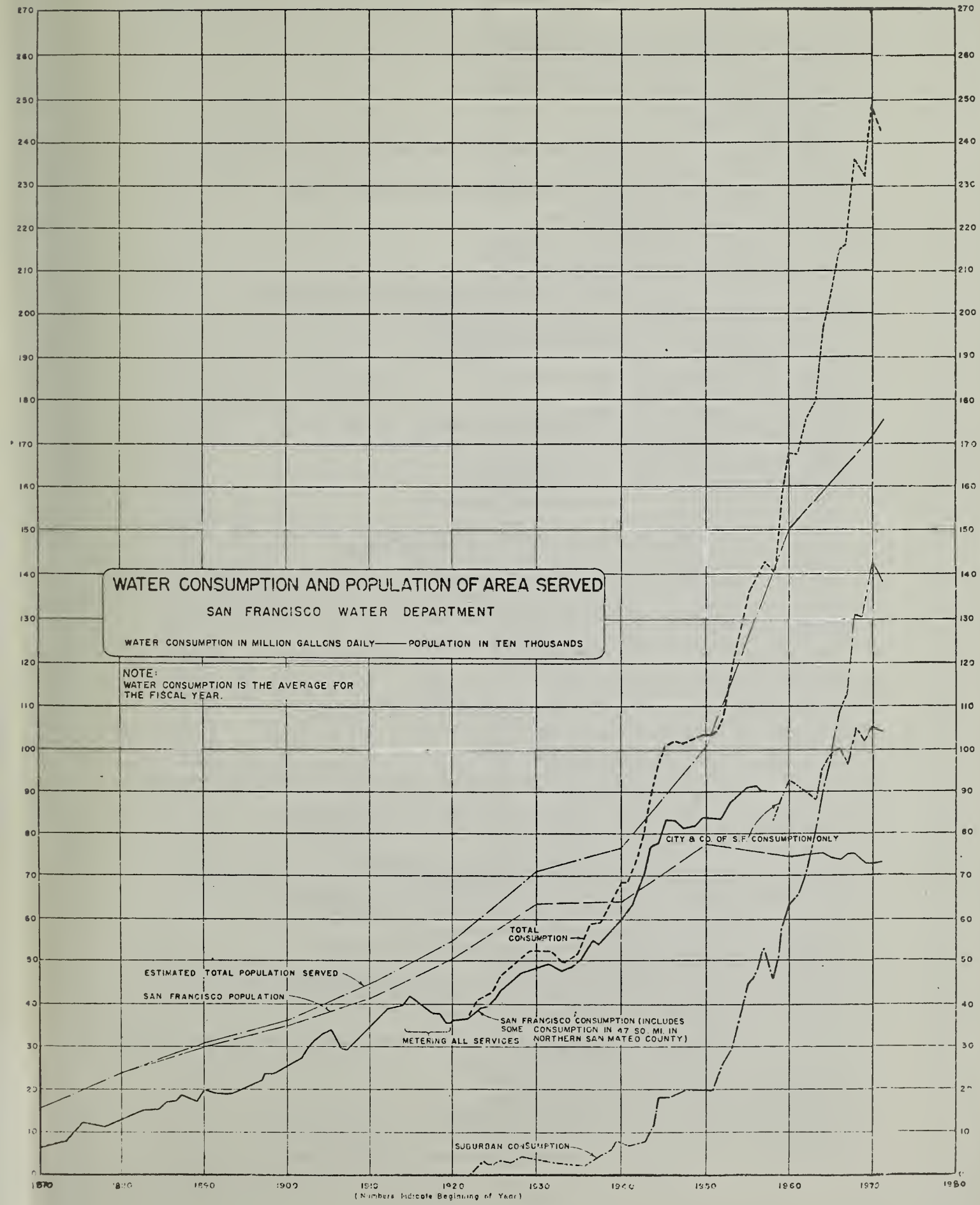
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

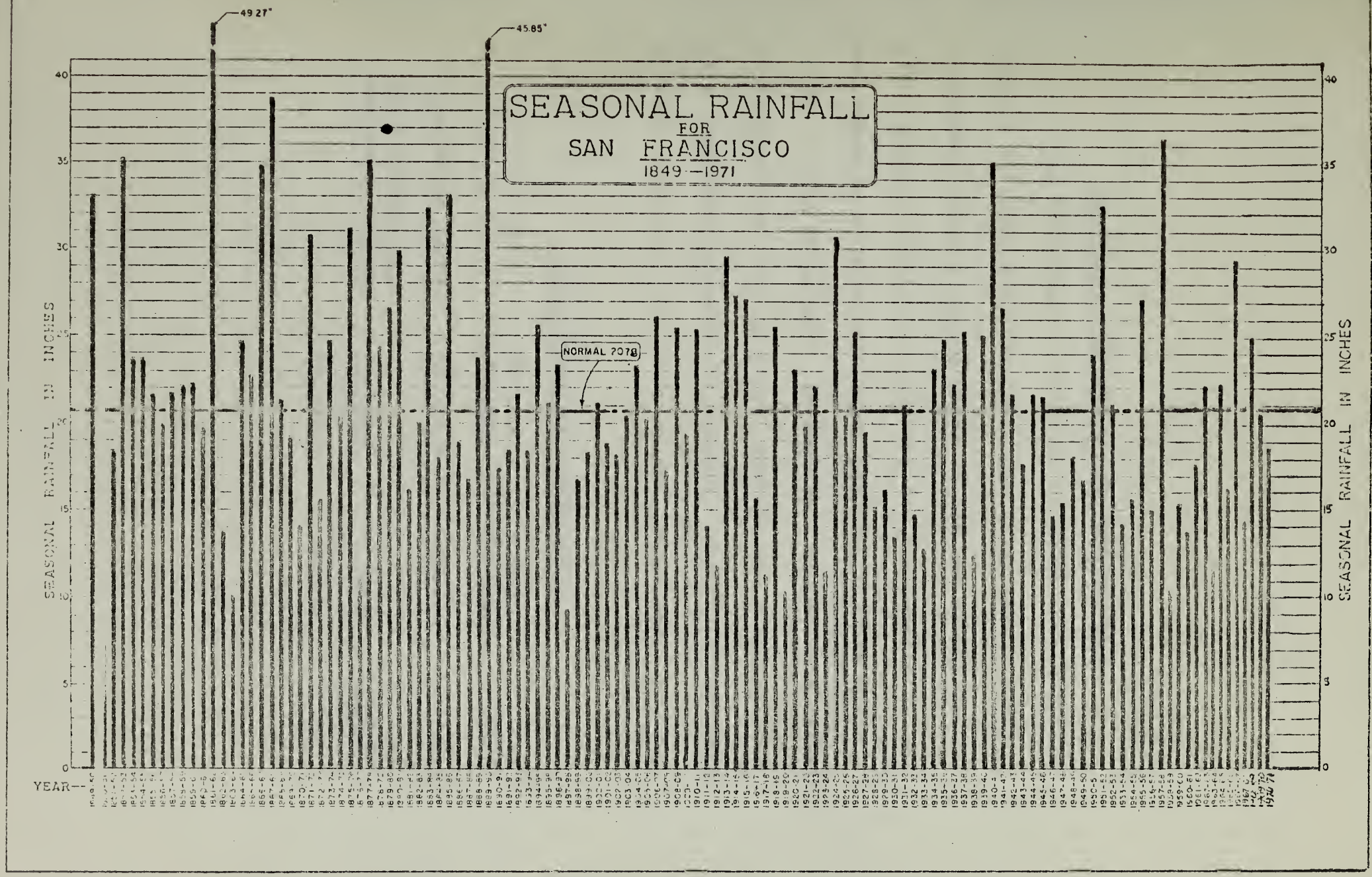
## HISTORICAL DEVELOPMENT & PROGRAM FOR FUTURE AQUEDUCT CONSTRUCTION

| | | | | |
|---|---|---|---|---|
| APPROVED Geo. D. Ruer | SCALE AS SHOWN | BY J.S.C. | DR. G.J.S. | X-1682 D |
| APPROVED J. K. Hunner GENERAL MANAGER AND CHIEF ENGINEER | | CK. G.J.S. | | |
| | DATE NOV. 8, 1955 | REVISED 9-23-72 | | |


WATER CONSUMPTION AND POPULATION OF AREA SERVED
SAN FRANCISCO WATER DEPARTMENT
WATER CONSUMPTION IN MILLION GALLONS DAILY——POPULATION IN TEN THOUSANDS
NOTE:
WATER CONSUMPTION IS THE AVERAGE FOR THE FISCAL YEAR.
CITY & CO. OF S.F. CONSUMPTION ONLY
TOTAL CONSUMPTION
ESTIMATED TOTAL POPULATION SERVED
SAN FRANCISCO POPULATION
SAN FRANCISCO CONSUMPTION (INCLUDES SOME CONSUMPTION IN 47 SQ. MI. IN NORTHERN SAN MATEO COUNTY)
METERING ALL SERVICES
SUBURBAN CONSUMPTION
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
(Numbers Indicate Beginning of Year)



X-1124


SEASONAL RAINFALL
FOR
SAN FRANCISCO
1849 — 1971
49.27"
45.85"
NORMAL 20.78
SEASONAL RAINFALL IN INCHES
SEASONAL RAINFALL IN INCHES
YEAR

## DELIVERY, PRODUCTION AND TRANSMISSION

San Francisco's diversion of water from mountain sources is limited by the Raker Act to an amount that, "together with the waters which it now has or may hereafter acquire, shall be necessary for the beneficial use for domestic or other municipal purposes". "The water which it (San Francisco) has acquired" varies with climatic conditions from year to year. 1970-71 was a fair year for water production from local sources. The following tables provide statistical information for fiscal year 1970-71:

### DELIVERIES FOR CONSUMPTION

| | Million Gallons | MGD Average | % |
|---|---|---|---|
| From Hetch Hetchy | 68,741.8 | 188.3 | 77.3 |
| From Alameda and Peninsula Sources | 20,185.7 | 55.3 | 22.7 |
| | 88,927.5 | 243.6 | 100.0 |

## RAINFALL

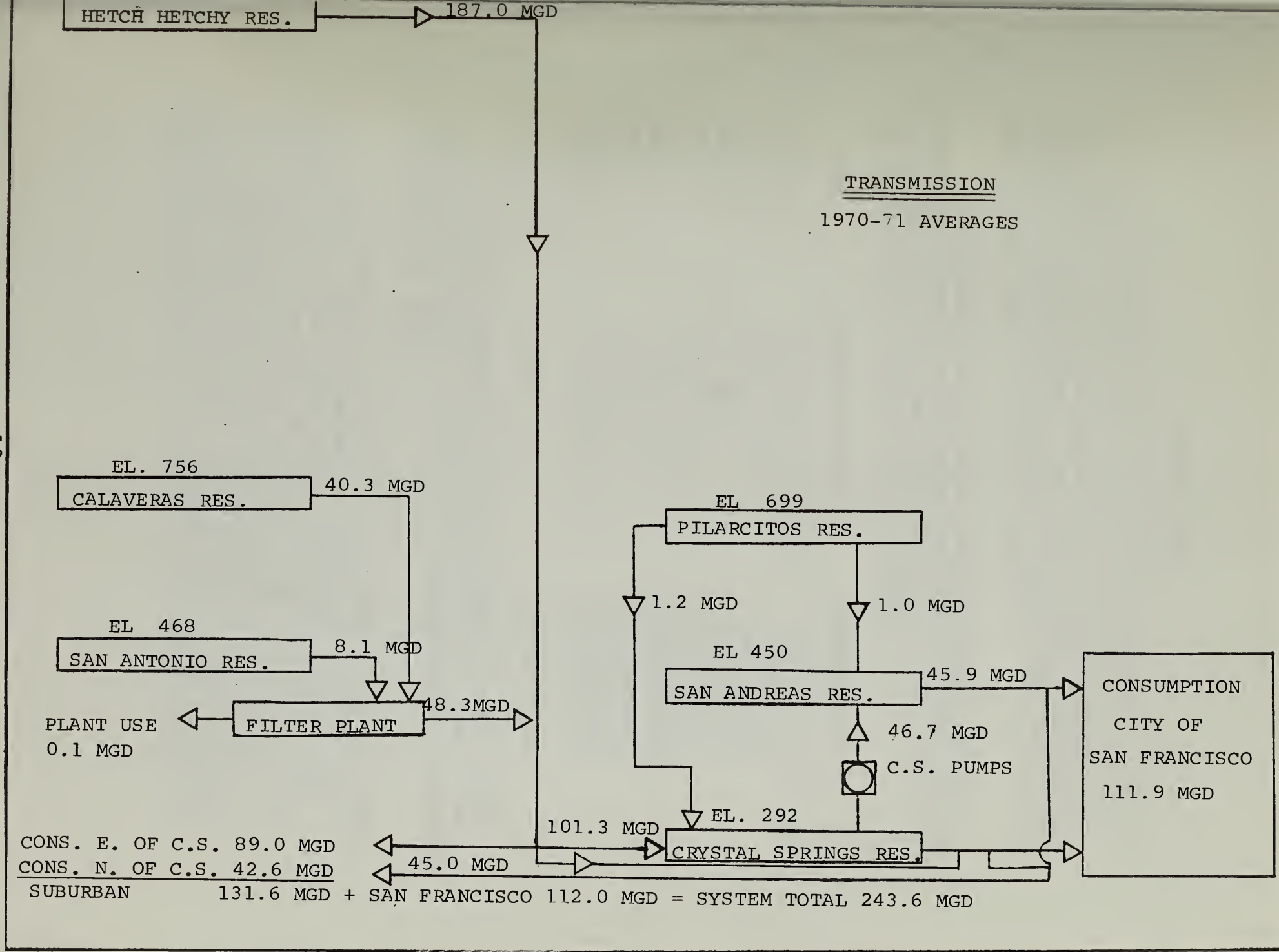
| Gaging Stations | 1970-71 | Comparison to Normal |
|---|---|---|
| Calaveras (Alameda County) | 21.61 inches | 99% |
| Crystal Springs Cottage (San Mateo Co.) | 22.53 " | 86% |
| Pilarcitos (San Mateo Co.) | 37.44 " | 84% |
| San Andreas ( " " " ) | 31.42 " | 86% |

## WATER PRODUCTION

| | 1969-70 | | 1970-71 | |
|---|---|---|---|---|
| | MG | MGD Average | MG | MGD Average |
| Calaveras (Alameda Co.) | 11,063.9 | 30.3 | 11,968.9 | 32.8 |
| San Antonio ( " " ) | 249.5 | 0.7 | 1,375.3 | 3.8 |
| Other Sources ( " " ) | 2,133.6 | 5.8 | 2,094.4 | 5.7 |
| Crystal Springs (San Mateo Co.) | 1,830.0 | 5.0 | 1,193.6 | 3.3 |
| Pilarcitos ( " " " ) | 861.1 | 2.4 | 952.9 | 2.6 |
| San Andreas ( " " " ) | 519.2 | 1.4 | 408.7 | 1.1 |
| TOTAL | 16,657.3 | 45.6 | 17,993.8 | 49.3 |

## WATER STORAGE

| | 7-01-70 | 6-30-71 | Minumum | | Maximum | |
|---|---|---|---|---|---|---|
| | MG | MG | Date | MG | Date | MG |
| Calaveras | 29,875 | 25,475 | 11-27-70 | 23,343 | 1-20-71 | 29,418 |
| San Antonio | 9,329 | 9,557 | 11-28-70 | 7,364 | 4-17-71 | 10,225 |
| Crystal Springs | 15,700 | 14,564 | 10-16-70 | 14,527 | 1-05-71 | 17,930 |
| Pilarcitos | 81 | 215 | 7-25-70 | 0 | 12-30-70 | 313 |
| San Andreas | 4,296 | 5,364 | 8-29-70 | 2,704 | 2-20-71 | 5,856 |
| TOTAL | 59,281 | 55,175 | | | | |


HETCH HETCHY RES.
187.0 MGD
TRANSMISSION
1970-71 AVERAGES
EL. 756
CALAVERAS RES.
40.3 MGD
EL 699
PILARCITOS RES.
1.2 MGD
1.0 MGD
EL 468
SAN ANTONIO RES.
8.1 MGD
EL 450
SAN ANDREAS RES.
45.9 MGD
CONSUMPTION
CITY OF
SAN FRANCISCO
111.9 MGD
48.3MGD
PLANT USE
0.1 MGD
FILTER PLANT
46.7 MGD
C.S. PUMPS
EL. 292
101.3 MGD
CONS. E. OF C.S. 89.0 MGD
CONS. N. OF C.S. 42.6 MGD
45.0 MGD
CRYSTAL SPRINGS RES.
SUBURBAN 131.6 MGD + SAN FRANCISCO 112.0 MGD = SYSTEM TOTAL 243.6 MGD

## WATER RIGHTS

In accordance with the 1916 and subsequent 1936 and other Alameda County Water District Agreements, the Department released water for replenishment of the underground supply of the Niles Cone. The total release entering Niles Cone during 1970-71 is tentatively estimated by this Department to have been 1,674 million gallons.

The quantities of water due the District and the quantities released by the Water Department to the District for replenishing the underground waters for each of the past ten years prior to 1970-71 are as follows:

| Year | Due the District | Released to District |
|---|---|---|
| 1960-61 | 164,730,000 Gallons | 669,039,000 Gallons |
| 1961-62 | 160,873,000 " | 692,974,000 " |
| 1962-63 | 211,547,000 " | 486,109,000 " |
| 1963-64 | None | 672,531,000 " |
| 1964-65 | 201,185,000 " | 1,696,091,000 " |
| 1965-66 | 196,544,000 " | 1,122,762,000 " |
| 1966-67 | 42,363,000 " | 1,885,672,000 " |
| 1967-68 | 265,512,000 " | 1,541.678,000 " |
| 1968-69 | 120,938,000 " | 1,762,598,000 " |
| 1969-70 | 78,683,000 " | 1,529,317,000 " |
| 10 Yr. Total | 1,442,375,000 " | 12,059,771,000 " |

The net accumulated advance release to the Alameda County Water District in accordance with the terms of the 1936 agreement amount to the 43,152 million gallons reported as of June 30, 1971.

The Sheriff of Alameda County continued to use the U. S. Navy's "Camp Shoemaker" as "Santa Rita Rehabilitation Center" during the fiscal year. Water supplied to this institution, as well as to the former Naval Housing Project, Komandorski Village and Camp Parks, was taken by the U. S. Government from the 4.105 acre tract within the Pleasanton Township County Water District. The withdrawal of ground waters for such purposes varied from a high of 2.02 million gallons to a low of 0.18 million gallons per

day on days when they pumped. The pumps operated throughout the year four to seven days per week, averaging 726,668 gallons per day for the year.

During the fiscal year, the tenants on the City's Well Field property near Pleasanton pumped about 378 million gallons of water from City owned wells for irrigation of this leased property.

During this fiscal year, the lessees on Department lands bordering Laguna and Alameda Creeks at Sunol used for irrigation about 69 million gallons of water pumped directly from these creeks.

## WATER QUALITY AND TREATMENT

All water drawn from Alameda County sources (Calaveras and San Antonio reservoirs and Sunol Filter Galleries) enters the system through Sunol Valley Water Treatment Plant. Chemicals used at this plant include 4,771 pounds of polyelectrolite, 29,388 pounds of carbon and 28,269 pounds of sodium silicate. The other chemicals used at this plant are included in the totals used throughout the system.

Customary procedures for the treatment of the San Francisco water supply were employed during the year and proper precautions were taken to insure its safety and purity. Disinfection of all supplies was continuous and water served to consumers complied with the bacteriological standards for drinking water established by the United States Public Health Service.

Dissolved chemical content of the supply sources varies from a very soft mountain water to that of a moderately soft local water. The mountain water constitutes the principal source of supply and requires treatment for the control of its corrosive properties. It is combined in varying proportions with the water from local sources and is soft to moderately soft when served to consumers. The water is generally free from tastes and odors and the quality is very good for supply derived from surface sources.

### LABORATORY:

All analytical work in the fields of biological bacteriology and chemistry, except the necessary field tests, was performed in our laboratory located at Millbrae which has been certified by the State Department of Public Health as an "Approved Water Laboratory for Complete Chemical and Complete Bacteriological Analyses".

### INSPECTIONS:

Periodic sanitary inspections of the watershed areas were conducted to insure the protection of the water supply. Particular attention was given to the areas of new and recent construction of the Junipero Serra Freeway in the watersheds of San Andreas and Crystal Springs reservoirs.

During the year a number of pipeline and tunnel inspections were conducted at various points in the water transmission system. Their purpose was the determination of the structural condition and degree of corrosive deterioration, if any, of the sections involved as well as the nature and extent of any organic growth and organic or inorganic sediment.

CHLORINATION:

Normal water treatment practices for safeguarding the San Francisco water supply were in force throughout the year. Disinfection of all supplies was continuous. A total of 2,083,257 pounds of chlorine was used during the year at the various chlorination stations.

DECHLORINATION:

A total of 12,411 pounds of sulfur dioxide was used during the year to partially dechlorinate water drawn from the sources that required high dosages of chlorine to control bacteriological quality.

FLUORIDATION:

Except for brief shutdowns for maintenance, repairs and adjustments, all water leaving Peninsula reservoirs was fluoridated, other than relatively small quantities delivered to the City of Millbrae through the service connections on the San Andreas Branch and the Sunset Supply Line. A total of 277,325 pounds of sodium silicofluoride and 455,520 pounds of liquid hydrofluosilicic acid was used during the year, with dosages at the operating stations averaging 0.74 milligrams per liter. This amount, added to the natural fluoride content of the water, resulted in an average total fluoride content in the water served to consumers of 0.79 milligrams per liter.

CORROSION CONTROL:

A total of 2,708,983 pounds of lime was added to the water coming from mountain sources to reduce the corrosive tendencies of this soft water.

ALGAE CONTROL:

Each of the storage reservoirs on the Peninsula and Calaveras reservoir received at least one copper sulfate treatment during the year for the control of algae growth. A total of 167,210 pounds of copper sulfate was used for algae control.

COAGULATION:

To remove excessive turbidity from San Andreas Creek water before it enters Crystal Springs reservoir, 124,887 gallons of liquid alum 48.1% aluminum sulfate) were mixed with the runoff waters as needed during periods of total flow.

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE I

| | A | B | C |
|---|---|---|---|
| Source | Hetch Hetchy Reservoir | Alameda East Portal (treated water) | Calaveras Pipeline (filtered water) |
| Dote Sompled | May 19, 1970 | May 21, 1970 | May 21, 1970 |
| MAJOR CHEMICAL CONSTITUENTS | mg/liter | mg/liter | mg/liter |
| Cotions: | | | |
| Calcium (Ca++) | 0.96 | 2.7 | 16.5 |
| Mognesium (Mg++) | 0.4 | 2.0 | 13.1 |
| Sodium (Na+) | 0.8 | 3.1 | 9.5 |
| Potossium (K+) | 0.5 | 0.5 | 2.5 |
| Anions: | | | |
| Bicarbonote ($HCO_3$-) | 6.1 | 11.6 | 101 |
| Corbonate ($CO_3$--) | 0.0 | 7.0 | 0.0 |
| Carbonic Acid ($H_2CO_3$) | 2.6 | 0.0 | 3.8 |
| Chloride (Cl-) | 0 | 3 | 6 |
| Sulfate ($SO_4$--) | 1.3 | 1.4 | 26.6 |
| Fluoride (F-) | 0.0 | 0.0 | 0.0 |
| MINOR, TRACE, AND NONIONIC CONSTITUENTS | | | |
| Aluminum (Al) | 0.05 | 0.06 | 0.00 |
| Arsenic (As) | <0.001 | <0.001 | <0.001 |
| Barium (Bo) | <0.01 | <0.01 | <0.01 |
| Cadmium (Cd) | <0.001 | <0.001 | <0.001 |
| Chromium (Cr) | <0.001 | <0.001 | <0.001 |
| Copper (Cu) | 0.002 | 0.002 | 0.04 |
| Iron (Fe) | 0.005 | 0.005 | 0.01 |
| Lead (Pb) | <0.01 | <0.01 | <0.01 |
| Mangonese (Mn) | <0.01 | <0.01 | <0.01 |
| Mercury (Hg) (microgram/liter) | 1.1 | 1.1 | 4.3 |
| Selenium (Se) | <0.001 | <0.001 | <0.001 |
| Silver (Ag) | <0.01 | <0.01 | <0.01 |
| Zinc (Zn) | <0.01 | <0.01 | <0.01 |
| Silica ($SiO_2$) (Soluble $SiO_2$) | 5.0 | 5.1 | 10.0 |
| Ammonio (Albuminoid-$NH_3$) | 0.03 | 0.02 | 0.11 |
| Ammonio (Free-$NH_3$) | 0.00 | 0.01 | 0.02 |
| Boron (B) | 0.07 | 0.07 | 0.06 |
| Cyonide (CN-) | <0.01 | <0.01 | <0.01 |
| Nitrate ($NO_3$-) | <0.1 | <0.1 | <0.1 |
| Nitrite ($NO_2$-) | <0.002 | <0.002 | <0.002 |
| Phosphate ($PO_4$---) | <0.01 | <0.01 | <0.01 |
| Tonnins & Lignins | 0.02 | 0.02 | 0.06 |
| Dissolved Oxygen ($O_2$) | 8.2 | 12.3 | 8.8 |
| Total Apporent ABS | 0.000 | 0.000 | 0.000 |
| DERIVED VALUES: | | | |
| Hordness as $CaCO_3$ | 4 | 15 | 95 |
| Alkolinity as $CaCO_3$ | 5 | 16 | 83 |
| TOTAL SOLIDS: | | | |
| Residue at 200°C | 8.4 | 27.6 | 161 |
| PHYSICAL MEASUREMENTS: | | | |
| Conductivity (Micromhos/CM) | 14 | 46 | 209 |
| pH | 7.2 | 9.4 | 8.4 |
| Turbidity (units) | 0.5 | 0.5 | 0.4 |
| Color (units) | 0 | 0 | 0 |
| Carbon Chloroform Extract (Mg/l) | - | .016 | - |
| Radioactivity (μμcuries/liter) + 95% | | | |
| Alpha | 0.39 ± 0.45 | 1.2 ± 0.5 | *N.S. |
| Beto | 0.6 ± 4.0 | 2.2 ± 4.8 | 4.0 ± 5.5 |

*N.S. - Not Significant

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE II

| | D | E | F |
|---|---|---|---|
| Source | Crystal Springs Lines | San Andreas Lines | Stone Dam Reservoir |
| Date Sampled | May 22, 1970 | May 26, 1970 | May 22, 1970 |
| MAJOR CHEMICAL CONSTITUENTS | mg/liter | mg/liter | mg/liter |
| Cations: | | | |
| Calcium (Ca++) | 9.0 | 10.5 | 20.0 |
| Magnesium (Mg++) | 6.2 | 5.8 | 17.0 |
| Sodium (Na+) | 4.6 | 6.9 | 14.3 |
| Potassium (K+) | 0.9 | 0.9 | 1.3 |
| Anions: | | | |
| Bicarbonate ($HCO_3$-) | 39 | 47.6 | 124 |
| Carbonate ($CO_3$--) | 0.0 | 0.0 | 0.0 |
| Carbonic Acid ($H_2CO_3$) | 7.2 | 7.5 | 23.3 |
| Chloride (Cl-) | 9 | 10 | 29 |
| Sulfate ($SO_4$--) | 10.4 | 9.8 | 9.6 |
| Fluoride (F-) | 0.9 | 1.0 | 0.0 |
| MINOR, TRACE, AND NONIONIC CONSTITUENTS | | | |
| Aluminum (Al) | 0.04 | 0.00 | 0.00 |
| Arsenic (As) | <0.001 | <0.001 | <0.001 |
| Barium (Ba) | <0.01 | <0.01 | <0.01 |
| Cadmium (Cd) | <0.001 | <0.001 | <0.001 |
| Chromium (Cr) | <0.001 | <0.001 | <0.001 |
| Copper (Cu) | 0.04 | 0.018 | 0.018 |
| Iron (Fe) | 0.04 | 0.03 | 0.005 |
| Lead (Pb) | <0.01 | <0.01 | <0.01 |
| Manganese (Mn) | <0.01 | <0.01 | <0.01 |
| Mercury (Hg) (microgram/liter) | 1.1 | 1.3 | 1.7 |
| Selenium (Se) | <0.001 | <0.001 | <0.001 |
| Silver (Ag) | <0.01 | <0.01 | <0.01 |
| Zinc (Zn) | <0.01 | <0.01 | <0.01 |
| Silica ($SiO_2$) (Soluble $SiO_2$) | 6.0 | 6.0 | 15.0 |
| Ammonia (Albuminoid-$NH_3$) | 0.02 | 0.03 | 0.09 |
| Ammonia (Free-$NH_3$) | 0.01 | 0.01 | 0.02 |
| Boron (B) | 0.06 | 0.06 | 0.05 |
| Cyanide (CN-) | <0.01 | <0.01 | <0.01 |
| Nitrate ($NO_3$-) | <0.1 | <0.1 | <0.1 |
| Nitrite ($NO_2$-) | <0.002 | <0.002 | <0.002 |
| Phosphate ($PO_4$---) | <0.01 | <0.01 | 0.026 |
| Tannins & Lignins | 0.02 | 0.02 | 0.08 |
| Dissolved Oxygen ($O_2$) | 9.9 | 9.6 | 10.3 |
| Total Apparent ABS | 0.000 | 0.000 | 0.000 |
| DERIVED VALUES: | | | |
| Hardness as $CaCO_3$ | 48 | 50 | 120 |
| Alkalinity as $CaCO_3$ | 32 | 39 | 102 |
| TOTAL SOLIDS: | | | |
| Residue at 200°C | 72.5 | 81.6 | 182 |
| PHYSICAL MEASUREMENTS: | | | |
| Conductivity (Micromhos/CM) | 121 | 136 | 303 |
| pH | 7.3 | 7.4 | 8.0 |
| Turbidity (units) | 1 | 1 | 1 |
| Color (units) | 0 | 0 | 1 |
| Carbon Chloroform Extract | .055 | .052 | - |
| Radioactivity (μμcuries/liter) ± 95% | | | |
| Alpha | 0.70 ± 0.54 | 0.43 ± 0.63 | 0.33 ± 0.68 |
| Beta | *N.S. | 1.2 ± 5.2 | 2.2 ± 6.3 |

*N.S. - Not Significant

SAN FRANCISCO WATER DEPARTMENT
MINERAL ANALYSES
TABLE III

| | G | H | I |
|---|---|---|---|
| Source | San Antonio Reservoir | Pleasanton Well Field | Lake Merced Reservoir |
| Date Sampled | May 21, 1970 | May 19, 1970 | May 22, 1970 |
| MAJOR CHEMICAL CONSTITUENTS | | | |
| Cations: | | | |
| Calcium (Ca++) | 25.5 | 46.7 | 21.3 |
| Magnesium (Mg++) | 18.5 | 46.0 | 29.3 |
| Sodium (Na+) | 15.0 | 30.0 | 45.5 |
| Potassium (K+) | 3.1 | 2.5 | 2.8 |
| Anions: | | | |
| Bicarbonate ($HCO_3$-) | 152 | 307 | 164 |
| Carbonate ($CO_3$--) | 0.0 | 0.0 | 4.2 |
| Carbonic Acid ($H_2CO_3$) | 0.3 | 25.6 | 0.9 |
| Chloride (Cl-) | 15 | 34 | 78 |
| Sulfate ($SO_4$--) | 29 | 62 | 24 |
| Fluoride (F-) | 0.0 | 0.0 | 0.3 |
| MINOR, TRACE, AND NONIONIC CONSTITUENTS | | | |
| Aluminum (Al) | 0.01 | 0.05 | 0.02 |
| Arsenic (As) | <0.001 | <0.001 | <0.001 |
| Barium (Ba) | <0.01 | <0.01 | <0.01 |
| Cadmium (Cd) | <0.001 | <0.001 | <0.001 |
| Chromium (Cr) | <0.001 | <0.001 | <0.001 |
| Copper (Cu) | 0.06 | 0.0 | 0.03 |
| Iron (Fe) | 0.005 | 0.005 | 0.005 |
| Lead (Pb) | <0.01 | <0.01 | <0.01 |
| Manganese (Mn) | <0.01 | <0.01 | <0.01 |
| Mercury (Hg) (microgram/liter) | 1.1 | 1.7 | 1.1 |
| Selenium (Se) | <0.001 | <0.001 | <0.001 |
| Silver (Ag) | <0.01 | <0.01 | <0.01 |
| Zinc (Zn) | <0.01 | <0.01 | <0.01 |
| Silica ($SiO_2$) Soluble $SiO_2$) | 2.0 | 18.0 | 25.0 |
| Ammonia (Albuminoid-$NH_3$) | 0.20 | 0.02 | 0.48 |
| Ammonia (Free-$NH_3$) | 0.02 | 0.00 | 0.05 |
| Boron (B) | 0.17 | 0.27 | 0.07 |
| Cyanide (CN-) | <0.01 | <0.01 | <0.01 |
| Nitrate ($NO_3$-) | <0.1 | 12 | <0.1 |
| Nitrite ($NO_2$-) | <0.002 | <0.002 | <0.002 |
| Phosphate ($PO_4$---) | <0.01 | 0.053 | <0.01 |
| Tannins & Lignins | 0.10 | 0.04 | 0.12 |
| Dissolved Oxygen ($O_2$) | 9.9 | 8.1 | 10.6 |
| Total Apparent ABS | 0.000 | 0.000 | 0.005 |
| DERIVED VALUES: | | | |
| Hardness as $CaCO_3$ | 140 | 306 | 174 |
| Alkalinity as $CaCO_3$ | 125 | 252 | 141 |
| TOTAL SOLIDS: | | | |
| Residue at 200°C | 198 | 370 | 332 |
| PHYSICAL MEASUREMENTS: | | | |
| Conductivity (Micromhos/CM) | 334 | 541 | 553 |
| pH | 7.7 | 7.4 | 8.6 |
| Turbidity (units) | 1 | 0.2 | 8 |
| Color (units) | 1 | 0 | 5 |
| Carbon Chloroform Extract (Mg/l) | - | - | - |
| Radioactivity (μμcuries/liter) ± 95% | | | |
| Alpha | 0.11 ± 2.9 | *N.S. | 0.61±0.84 |
| Beta | *N.S. | 15 ± 25 | 1.8 ± 11 |

*N.S. - Not Significant

## DISTRIBUTION AND CONSUMPTION

Within the City of San Francisco the Department distributes, delivers and meters water directly to consumers. Outside of San Francisco water is delivered and metered from transmission mains to water purveyors who distribute to customers in their service areas.

### METERED DELIVERIES
### 1970-1971

| | Million Cubic Feet Year | M.G.D. | % | % Increase Over Prior Year |
|---|---|---|---|---|
| City* | 4,818.5 | 99.0 | 42.0 | 0.1 |
| Suburban** | 6,653.0 | 136.5 | 58.0 | - 2.5 |
| Systemwide | 11,471.5 | 235.5 | 100.0 | - 1.4 |

*Includes 368.6 million cubic feet (2,757.1 million gallons) used by municipal non-pay accounts.

**Includes 94.8 million cubic feet (709.1 million gallons) used by suburban non-pay accounts.

## MAINTENANCE AND OPERATION

The Department has a total of 159,712 service pipes (from street main to the meter) in active use. The pipes are smaller and more subject to damage than mains. During and following World War II available material proved to have a shorter useful life than previous material. During 1970-71 the following was accomplished:

| | |
|---|---|
| New Services Installed | 625 |
| Old Services Replaced | 7,856 |
| Services Repaired | 3,265 |
| Meters Installed | 9,219 |
| Meters Repaired | 13,238 |

A total of 9.4 miles of new distribution mains were laid and 5.0 miles of old mains were removed or abandoned. There was a total of 1,165 miles of water mains in the City Distribution System on June 30, 1971.

The following tables give detailed information on sales, delivery and consumption for fiscal 1970-71:

## WATER SOLD IN SUBURBAN AREA

## FISCAL YEAR 1970-71

| SAN MATEO COUNTY | CUBIC FEET TOTAL FOR YEAR * | MGD | CHARGE TOTAL FOR YEAR |
|---|---|---|---|
| MUNICIPAL UTILITIES | | | |
| City of Redwood City | 429,291,200 | 8.80 | $ 760,060.25 |
| City of Burlingame | 234,173,000 | 4.80 | 427,919.23 |
| Belmont Co. Water District | 179,452,900 | 3.68 | 324,145.88 |
| Menlo Park Muni. Water Dist. | 173,206,400 | 3.55 | 320,312.26 |
| City of Millbrae | 146,496,600 | 3.00 | 270,001.70 |
| No. Coast Co. Water District | 134,807,900 | 2.76 | 241,075.10 |
| Town of Hillsborough | 133,899,600 | 2.75 | 254,937.33 |
| City of San Bruno | 129,016,700 | 2.64 | 244,730.53 |
| City of Daly City | 115,744,800 | 2.37 | 221,814.90 |
| East Palo Alto Water Dist. | 102,216,000 | 2.09 | 184,450.73 |
| Estero Municipal Improvement Dist. | 69,176,000 | 1.42 | 125,950.34 |
| Coastside Co. Water Dist. | 29,259,000 | 0.60 | 56,956.82 |
| Westborough Co. Water Dist. | 24,866,400 | 0.51 | 47,695.67 |
| Dimond Public Utilities Dist. | 17,427,900 | 0.36 | 35,801.19 |
| City of Brisbane | 14,792,400 | 0.30 | 32,353.27 |
| Guadalupe Valley Muni. Impr. Dist. | 11,514,100 | 0.24 | 27,072.16 |
| Skyline County Water Dist. | 3,080,600 | 0.06 | 8,153.92 |
| Palomar Park Co. Water Dist. | 1,963,000 | 0.04 | 5,207.98 |
| Los Trancos Co. Water Dist. | 1,709,600 | 0.04 | 4,577.91 |
| Cordilleras Mutual Water Assn. | 332,400 | 0.01 | 1,137.66 |
| Airport | 76,581,400 | 1.56 | 159,774.94 |
| TOTAL MUNICIPAL UTILITIES | 2,029,007,900 | 41.58 | $3,754,129.77 |
| Other Water Sold | 1,618,166,500 | 33.16 | 2,976,614.08 |
| TOTAL SAN MATEO COUNTY | 3,647,174,400 | 74.74 | $6,730,743.85 |

(Continued)

## WATER SOLD IN SUBURBAN AREA

FISCAL YEAR 1970 - 1971

(Continued)

| SANTA CLARA COUNTY | CUBIC FEET TOTAL FOR YEAR * | MGD | CHARGE TOTAL FOR YEAR |
|---|---|---|---|
| MUNICIPAL UTILITIES | | | |
| City of Palo Alto | 792,604,700 | 16.24 | $1,385,505.84 |
| City of Sunnyvale | 425,489,500 | 8.72 | 751,773.03 |
| City of Mountain View | 329,274,000 | 6.75 | 582,092.28 |
| City of Milpitas | 219,577,600 | 4.50 | 397,014.60 |
| Purissima Hills County Water District | 44,761,300 | 0.92 | 84,582.19 |
| City of San Jose | 6,763,500 | 0.14 | 15,984.36 |
| TOTAL MUNICIPAL UTILITIES | 1,818,470,600 | 37.27 | $3,216,952.30 |
| Moffett Field | 90,871,700 | 1.86 | 158,860.01 |
| Other Water Sold | 54,308,900 | 1.11 | 104,653.99 |
| TOTAL SANTA CLARA COUNTY | 1,963,651,200 | 40.24 | $3,480,466.30 |
| ALAMEDA COUNTY | | | |
| MUNICIPAL UTILITIES | | | |
| Hayward Muni.Water System | 675,985,900 | 13,85 | $1,174,120.21 |
| Alameda County Water Dist. | 200,818,700 | 4.12 | 383,772.31 |
| TOTAL MUNICIPAL UTILITIES | 876,804,600 | 17.97 | $1,557,892.52 |
| Other Water Sold | 70,555,700 | 1.45 | 150,389.27 |
| TOTAL ALAMEDA COUNTY | 947,360,300 | 19.42 | $1,708,281.79 |
| TOTAL WATER SOLD SUBURBAN AREA | 6,558,185,900 | 134.40 | $11,919,491.94 |

*These quantities are measured by the consumers' meters and for this fiscal year an average of about 2.8% must be added in order to determine the quantities of water required to be produced and released for consumption in each case. This is true for all quantities of water shown in this "Distribution and Consumption" section of the Annual Report.

DELIVERIES AND CONSUMPTION
FROM
SAN FRANCISCO WATER DEPARTMENT SOURCES
FISCAL YEAR - 1970-71

| Area, Utility or District | Metered 100 Cu.Ft. Year | Delivery MGD | Consumption (1) MGD | Consumption (1) Ac.Ft. Year |
|---|---|---|---|---|
| San Mateo County | | | | |
| Bayshore City (Dimond Utility District) | 174,279 | 0.36 | 0.36 | 402 |
| Brisbane | 147,924 | 0.30 | 0.30 | 341 |
| Guadalupe Valley Muni. Impr. District | 115,141 | 0.24 | 0.24 | 266 |
| Daly City | 1,157,448 | 2.37 | 2.38 | 2,670 |
| Colma (Broadmoor, Calif. Water Serv. Co.) | 351,854 | 0.72 | 0.72 | 812 |
| South San Francisco (Calif. Water Serv. Co.) | 3,129,684 | 6.41 | 6.44 | 7,219 |
| North Coast Co. Water Dist. | 1,348,079 | 2.76 | 2.78 | 3,110 |
| Coastside Co. Water Dist. | 292,590 | 0.60 | 0.60 | 675 |
| San Bruno | 1,290,167 | 2.64 | 2.65 | 2,976 |
| S. F. International Airport<br>Sold 76,581,400 Cu.Ft.<br>S.F.Use 16,451,000 Cu.Ft. (2) | 930,324 | 1.91 | 1.92 | 2,146 |
| Millbrae | 1,464,966 | 3.00 | 3.02 | 3,379 |
| Burlingame | 2,341,730 | 4.80 | 4.82 | 5,402 |
| Hillsborough | 1,338,996 | 2.75 | 2.76 | 3,089 |
| Crystal Springs Golf Club (2) | 125,506 | 0.26 | 0.26 | 290 |
| San Mateo (Calif. Water Serv. Co.) | 5,791,730 | 11.87 | 11.93 | 13,360 |
| Belmont County Water Dist. | 1,794,529 | 3.68 | 3.70 | 4,139 |
| San Carlos (Calif. Water Serv. Co.) | 2,036,956 | 4.17 | 4.19 | 4,699 |

DELIVERIES AND CONSUMPTION
FROM
SAN FRANCISCO WATER DEPARTMENT SOURCES
FISCAL YEAR 1970-71

(continued)

| Area, Utility or District | Metered 100 Cu.Ft. Year | Delivery MGD | Consumption (1) MGD | Consumption (1) Ac.Ft. Year |
|---|---|---|---|---|
| San Mateo County (cont'd) | | | | |
| Westborough Co. Water Dist | 248,664 | 0.51 | 0.51 | 574 |
| Redwood City | 4,292,912 | 8.80 | 8.84 | 9,902 |
| Redwood City (Calif. Water Serv. Co.) | 303,998 | 0.62 | 0.62 | 701 |
| Cordilleras Mut'l Water | 3,324 | 0.01 | 0.01 | 8 |
| Palomar Pk. Co. Water Dist. | 19,630 | 0.04 | [illegible] | 45 |
| Woodside (Calif. Water Serv. Co.) | 677,920 | 1.39 | 1.40 | 1,564 |
| To Bear Gulch District (Calif. Water Serv. Co.) | 1,439,926 | 2.95 | 2.97 | 3,321 |
| Menlo Park Muni Water Dist. | 1,732,064 | 3.55 | 3.57 | 3,995 |
| Menlo Park (Calif. Water Serv. Co.) | 1,935,729 | 3.97 | 3.99 | 4,465 |
| East Palo Alto Water Dist.* | 1,022,160 | 2.09 | 2.10 | 2,358 |
| Skyline County Water Dist. | 30,806 | 0.06 | 0.06 | 71 |
| Estero Municipal Improvement District | 691,760 | 1.42 | 1.43 | 1,596 |
| Los Trancos | 17,096 | 0.04 | 0.04 | 39 |
| City of San Francisco | | | | |
| County Jail (2) | 286,351 | 0.50 | 0.59 | 660 |
| Social Services (2) | 5,334 | 0.01 | 0.01 | 12 |
| Hassler Hospital | 25,402 | 0.05 | 0.05 | 59 |
| Other Water delivered in San Mateo Co. | 513,867 | 1.05 | 1.06 | 1,185 |
| Total for San Mateo Co. | 37,078,847 | 75.99 | 76.36 | 85,530 |

*Formerly Ravenswood Water Dist.

DELIVERIES AND CONSUMPTION
FROM
SAN FRANCISCO WATER DEPARTMENT SOURCES
FISCAL YEAR 1970-71

(continued)

| Area, Utility or District | Metered 100 Cu.Ft. Year | Delivery MGD | Consumption(1) MGD | Consumption(1) Ac.Ft. Year |
|---|---|---|---|---|
| Santa Clara County | | | | |
| Palo Alto | 7,926,047 | 16.24 | 16.32 | 18,283 |
| Purissima Hills Co. Water Dist. | 447,613 | 0.92 | 0.92 | 1,032 |
| Mountain View | 3,292,740 | 6.75 | 6.78 | 7,595 |
| Moffett Field | 908,717 | 1.86 | 1.87 | 2,096 |
| Sunnyvale | 4,254,895 | 8.72 | 8.76 | 9,815 |
| Agnew State Hospital | 10,437 | 0.02 | 0.02 | 24 |
| Milpitas Co. Water Dist. | 2,195,776 | 4.50 | 4.52 | 5,065 |
| San Jose | 67,635 | 0.14 | 0.14 | 156 |
| Other Water delivered in Santa Clara County | 532,652 | 1.09 | 1.10 | 1,229 |
| Total for Santa Clara Co. | 19,636,512 | 40.24 | 40.43 | 45,295 |
| Alameda County | | | | |
| Alameda County Water Dist. | 2,008,187 | 4.12 | 4.14 | 4,633 |
| Newark (various consumers) | 165,204 | 0.34 | 0.34 | 381 |
| Hayward Muni. Water System | 6,759,859 | 13.85 | 13.92 | 15,593 |
| Atomic Energy Commission Livermore (2) | 342,928 | 0.70 | 0.71 | 791 |
| Sunol | | | | |
| Domestic Supply | 30,096 | 0.06 | 0.06 | 70 |
| Water Dept. Lands (2) From Transmission Lines | 162,290 | 0.33 | 0.33 | 374 |
| Water Dept. Lands (2) Est'd Not From Transmission Lines | 92,262 | 0.19 | 0.19 | 213 |

DELIVERIES AND CONSUMPTION
FROM
SAN FRANCISCO WATER DEPARTMENT SOURCES
FISCAL YEAR 1970-71

(continued)

| Area, Utility or District | Metered Delivery 100 Cu.Ft. Year | MGD | Consumption (1) MGD | Ac.Ft. Year |
|---|---|---|---|---|
| Alameda County (cont'd) | | | | |
| Vallecitos | 316,686 | 0.65 | 0.65 | 731 |
| Castlewood Country Club | 75,289 | 0.16 | 0.16 | 174 |
| Pleasanton Well Field Agricultureal Use (2) Estimated | 288,350 | 0.59 | 0.59 | 665 |
| Other Water Delivered in Alameda County | 459,536 | 0.94 | 0.95 | 1,060 |
| Total for Alameda County | 10,701,293 | 21.93 | 22.04 | 24,685 |
| Total for San Mateo,Santa Clara and Alameda Counties | 67,416,652 | 138.16 | 138.83 | 155,510 |
| Total for San Francisco County | 48,184,707 | 98.74 | 104.81 | 117,411 |
| Total for San Francisco Water Department System | 115,601,359 | 236.90 | 243.64 | 272,921 |

(1) Consumption is system input. The difference between "consumption" and "Metered delivery" consists of system losses and uses, including leakage, losses due to pipe breaks, under-registration of meters, water used at hydrants that is not billed (fire use in San Francisco averaged 0.04 mgd), blowoff water, water used for Water Department operating purposes, evaporation from distribution reservoirs and other similar losses.

(2) This water is not included in the tabulation of water sold.

## REVENUE

The Water Department is entirely self-supporting. All operating costs, taxes, capital costs, bond interest and bond redemption (including the original $40,000,000 bond issue for purchase of Spring Valley Water Company) are paid from revenues. In addition, the Department furnishes free water to other San Francisco city departments that are tax supported.

Water Sales were 12.2 greater than for the previous year. Net sales in San Francisco produced 54.0% of the water sales revenue, with the balance of 46.0% coming from deliveries outside of the city.

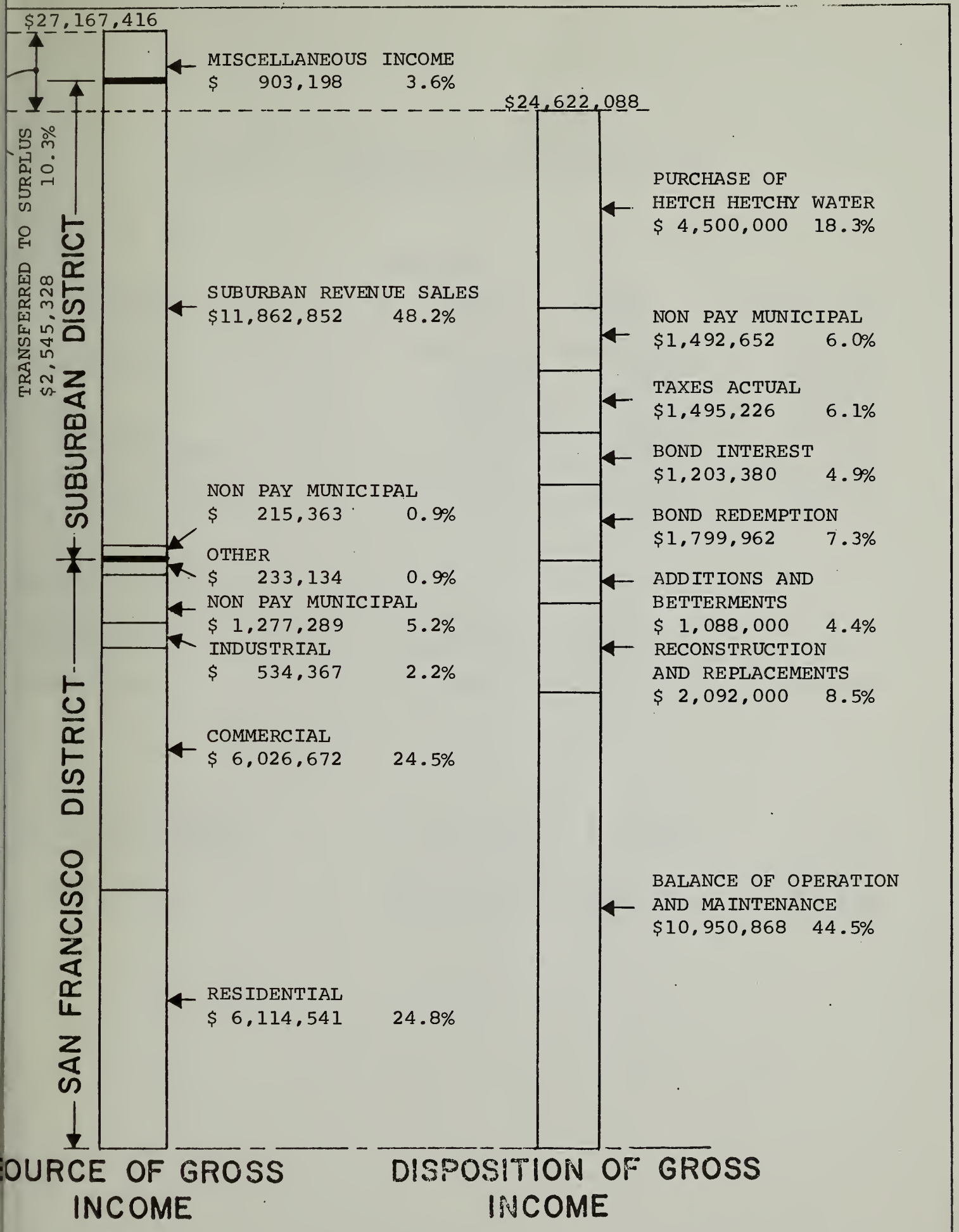
It may be noted that these revenue percentages are approximately reversed from the metered quantities delivered shown in the preceding section.

| | Metered Quantities | Revenue |
|---|---|---|
| San Francisco | 42.0% | 54.0% |
| Suburban | 58.0% | 46.0% |

This occurs because the larger quantities of water delivered to a single account for resale fall in a lower unit price bracket than the numerous small consumer accounts within the city.

Other Income includes such items as: rentals, crop shares and royalties amounting to $637,632; walnut orchard crop $25,000; and interest on bank balances of $151,659.

The following tables give detail of revenue sources and expenditures.




FISCAL YEAR ENDING 6-30-71

SAN FRANCISCO WATER DEPARTMENT
COMPARISON OF ESTIMATED AND ACTUAL RECEIPTS
FISCAL YEAR 1970-71

| | RECEIPTS | | |
|---|---|---|---|
| REVENUES | BUDGET | ACTUAL | -UNDER, OVER |
| evenue from Sale of Water | $25,150,000 | $24,299,322 | $ 850,678 |
| w Installations | 60,000 | 85,514 | - 25,514 |
| nts | 685,000 | 586,894 | 98,106 |
| nterest | 150,000 | 192,665 | - 42,665 |
| le of Walnuts | 30,000 | 15,843 | 14,157 |
| iscellaneous Revenue | 30,000 | 22,282 | 7,718 |
| TOTAL GROSS REVENUE | $26,105,000 | $25,202,520 | $ 902,480 |
| CEIPTS BY TRANSFER | | | |
| om Unappropriated Revenue (Prior Year) | 5,500,000 | 5,500,000 | -0- |
| TOTAL RECEIPTS | $31,605,000 | $30,702,520 | $ 902,480 |
| SS | | | |
| location of Revenue to letch Hetchy Project | 4,500,000 | 4,500,000 | -0- |
| appropriated Revenue | 8,333,475 | 8,333,475 | -0- |
| TOTAL BUDGET | $18,771,525 | $17,869,045 | $ 902,480 |

SAN FRANCISCO WATER DEPARTMENT

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES (INCLUDING ENCUMBRANCES)

FISCAL YEAR
1970-71

| DESCRIPTION | BUDGET | ACTUAL | -UNDER, OVER |
|---|---|---|---|
| Permanent Salaries | $ 3,138,410 | $ 2,987,874 | $ 150,536 |
| Allowance for Overtime | 28,919 | 30,313 | - 1,394 |
| Allowance for Holidays | 25,603 | 24,087 | 1,516 |
| Extended Work Week | 67,352 | 64,208 | 3,144 |
| Temporary Salaries | 84,542 | 85,325 | - 783 |
| Wages | 3,367,672 | 3,524,736 | -157,064 |
| Wages - Gardeners | 172,236 | 180,841 | - 8,605 |
| | $6,884,734 | $ 6,897,384 | $ - 12,650 |
| Contractual Services | 928,625 | 1,019,811 | - 91,186 |
| Materials & Supplies | 817,160 | 858,024 | - 40,864 |
| Compensation Insurance | 45,000 | 69,631 | - 24,631 |
| Injuries & Damages | 30,000 | 26,822 | 3,178 |
| Fidelity & Damages | 1,950 | 466 | 1,484 |
| Automobile Insurance | 28,000 | 27,859 | 141 |
| Fire Insurance | 3,566 | 3,893 | - 327 |
| Other Insurance | 11,000 | 16,692 | - 5,692 |
| Commissions for Collections | 19,000 | 13,411 | 5,589 |
| Assessments | 20,000 | 4,331 | 15,669 |
| Membership Dues | 750 | 650 | 100 |
| Fees, Licenses & Permits | 10,000 | 4,599 | 5,401 |
| Retirement Allowance | 889,899 | 918,905 | - 29,006 |
| Social Security | 244,760 | 217,902 | 26,858 |
| Health Service System | 60,976 | 60,976 | -0- |
| Taxes | 1,315,000 | 1,495,226 | -180,226 |
| Rents | 1,810 | 306 | 1,504 |
| Services of Other Departments | 335,842 | 335,842 | -0- |
| Electronic Data Processing | 315,000 | 315,000 | -0- |
| TOTAL OPERATING BUDGET | $11,963,072 | $12,287,730 | -324,658 |
| Equipment | 160,000 | 158,364 | 1,636 |
| Additions & Betterments | 1,088,000 | 1,088,000 | -0- |
| Reconstruction & Replacement | 2,092,000 | 2,092,000 | -0- |
| Bond Interest & Redemption | 3,468,453 | 3,003,342 | 465,111 |
| TOTAL BUDGET | $18,771,525 | $18,629,436 | $ 142,089 |

## ADDITIONS, BETTERMENTS, RECONSTRUCTION AND REPLACEMENTS

During the fiscal year this Department handled 56 formal construction contracts valued at $21,326,227. Forty of the 56 were new contracts awarded during the year, of which 27 were completed, 6 were under construction, and 7 were not started. Sixteen contracts were carried over from the previous year and were completed during the fiscal year.

The money actually spent on contracts during the fiscal year ending June 30, 1971, including the engineering and inspections costs bid by the contractor on the cast iron main contracts, was approximately $9,647,143.

At the beginning of the year major emphasis focused on completion of the 4,500 foot, 96-inch diameter Crystal Springs Bypass Pipeline. This project was completed in August and placed in service in October enabling the Water Department to deliver Hetch Hetchy water directly to San Francisco without emptying first into Peninsula reservoir.

The second most important project is the San Andreas Water Filtration Plant. With the completion of this plant and the by-pass facilities mentioned above, all local sources of water can be filtered. At the end of the year this project was on schedule with concreting completed for the main structure and with a great deal of piping and mechanical work installed.

The completion of Bay Division Pipeline No. 4 was considered the next most important project. The design of remaining portion, Section "C", was completed in January 1971. Funding for this project required attendance at 3 finance committee meetings where the project was approved each time and 3 times before the full Board. The project was approved by the Board the third time and the contract advertised.

Due to the emphasis placed upon major projects, State Highway and BARTD projects, several small projects had been deferred. This year saw a major r duction in this backlog. In several of the continuing projects, design was ahead of available funds.

During this year several Professional Services Agreements were arranged and work under existing agreements was continued. This type of agreement is used for the performance of work that requires specialized experience and personnel or for work that the Department cannot accomplish on schedule because qualified personnel are already engaged on projects on high priority.

Professional services contracts and agreements for the fiscal year are as follows:

1. Professional Services for Embankment Investigation and Preparation of Plans and Specifications for New Lining, Roof and Appurtenant Structures at Stanford Heights Reservoir in San Francisco - James M. Montgomery, Consulting Engineers, Inc.

2. Waste Water Survey - The Pitometer Associates.

3. Professional Services for Investigation of Soil and Geologic Conditions at Site of Proposed Balancing Reservoir in San Mateo County - Dames & Moore, Consulting Engineers in Applied Earth Sciences.

4. Professional Services Relating to Reconstruction of Crystal Springs Chlorination Station - Dean S. Kingman Consulting Engineers

5. Professional Services Relating to the San Andreas Water Filtration Plant and the Crystal Springs Water Filtration Plant - Joint Venture of Brown and Caldwell and James M. Montgomery, Consulting Engineers.

6. Professional Services - Additional Studies of Water Rates - Brown and Caldwell, Consulting Engineers.

7. Professional Services - Repair of Pilarcitos Dam - W. A. Wahler and Associates.

8. Professional Services - Design of Hunters Point Reservoir - Kirker, Chapman & Associates.

9. Professional Services - Investigation, Analysis and Report on Slide Near the Southwestern End of Turner Dam - Woodward, Clyde and Associates.

10. Professional Services - Plans, Specifications and Consulting Services During Construction of Addition to Sunol Valley Water Filtration Plant - Brown and Caldwell - Montgomery.

11. Professional Services - Plans, Specifications and Consulting Services During Construction of Balancing Reservoir for Crystal Springs By-pass Tunnel and Appurtenant Pumping Station - Brown and Caldwell - Montgomery.

12. Professional Services - Corrosion Survey on 16 Miles of Bay Division Pipeline No. 3, Section B, From Milpitas to Stanford Tunnel.

13. Professional Services - Noise Level Survey of Sunol and San Antonio Pumping Plants.

Existing cathodic protection stations along the transmission mains were inspected regularly and adjusted to insure adequate protection to the pipelines in the most corrosive areas. New construction on all pipelines is including electrical continuity, plus electrolysis test leads at reasonable locations.

On July 22, 1969, a contract was awarded to The Pitometer Associates for additional leak surveys. The approved cost of work under this contract to August 10, 1970 was $20,000.

Under this new contract leak surveys were conducted on 69 miles of water mains in 4 districts. Forty-eight leaks were located and repaired, reducing waste a total of 443,000 gallons per day. At the minimum rate for water sold within the city limits, the repair of these leaks represented an annual saving of approximately $26,300.

The six major projects authorized by the $115,000,000 Water Supply Improvement Bond Issue at the 1961 election were proceeding on a revised schedule. Construction of the Crystal Springs 96" By-pass Pipeline was completed during the year.

The remaining projects or units of projects and their tentative beginning construction dates are as follows:

| | | | |
|---|---|---|---|
| 1. | 1971 | Bay Division Pipeline No.4 Section C | $5,567,100 |
| 2. | 1972 | Crystal Springs Pump Station Improvements | 870,000 |
| 3. | 1970 | Crystal Springs Pipeline No. 3 Hillsborough to Millbrae Section (92% complete on June 30,1971) | 1,996,482 |
| 4. | 1973 | Balboa Reservoir - Lining, Roof and Appurtenances, South Basin | 3,200,000 |

FORMAL CONTRACTS:

The work under formal contracts has been separated into two main categories: Replacements and Additions to City pipe system, and Replacements and Additions to supply, transmission, treatment and miscellaneous facilities. Thirty contracts valued at $3,006,203 were for additions, replacements and relocations to the City pipe system and twenty-six contracts valued at $18,320,024 were for replacements and additions to supply, transmission, treatment and miscellaneous facilities. The contracts on the City pipe system include relocations required because of freeway construction, which work is performed at State expense except for certain credit allowances for depreciation of the replaced facility.

REPLACEMENTS AND ADDITIONS TO CITY PIPE SYSTEM:

The 18 contracts for additions to the City pipe system provided for the installation of about 38,424 feet of pipe. Most of this pipe was cast iron and ductile iron varying from 4-inch to 16-inch diameter, approximately 55 per cent of which was 6-inch and 8-inch diameter. Included in this amount was 1,052 feet of 16-inch ductile iron pipe installed during the fiscal year.

TABLE NO. 26

CONTRACT DATA 1970-71

| Contract No. | Title of Contract | Division | No. of Bidders | Contractor | Date of Award | Date of Completion | % Complete 6-30-71 | Bid Price | Total Cost to 6-30-71 |
|---|---|---|---|---|---|---|---|---|---|
| 1242R | Lay 8" DIM in Crestmont Drive | C.D.D. | 5 | Joseph Kaplan, Inc. | 11-25-69 | 7-31-70 | 100 | $ 8,130.00 | $ 8,266.25 |
| 1345 | Furn. and Install Meter and Valve in 60" Crystal Spring Pipeline No. 2 at Sunnydale | General | 6 | Hood Corp. | 5-6-69 | 9-4-70 | 100 | 135,810.00 | 139,839.00 |
| 1380 | Rehabilitation of Stanford Heights Reservoir | General | 6 | Arntz Bros. | 6-17-69 | | 86 | 1,043,600.00 | 809,947.17 |
| 1400 | Construction of Crystal Springs Bypass Pipeline | Peninsula | 7 | Hood Corp. | 4-1-69 | 8-12-70 | 100 | 1,038,440.00 | 1,074,239.66 |
| 1415 | Constr. of Crystal Springs Bypass Fluoridation Bldg. (in San Mateo County) | Peninsula | 14 | Albay Constr. Company | 2-9-71 | | 45 | 153,814.00 | 66,997.80 |
| 1422 | Lay 8" DIM in Geary Blvd., Shoreview Dr. and Others | C.D.D. | 6 | W. L. Fairey | 5-25-71 | | 11 | 36,204.00 | 2,154.42 |
| 1425 | Construction of Crystal Springs Chlorine Station (in San Mateo County) | Peninsula | 11 | Wilco Constr. Company | 4-28-70 | | 99 | 176,100.00 | 156,905.10 |
| 1440 | San Andreas Water Filtration Plant | Peninsula | 6 | Engstrum & Nourse, Stolte, and Monterey Mechanical Co. (a Joint Venture) | 10-28-69 | | 84 | 7,482,000.00 | 5,693,464.71 |
| 1444 | Lay 8" DIM in Clay Street Between Polk & Taylor Streets | C.D.D. | 7 | W. L. Fairey | 8-25-70 | 12-16-70 | 100 | 82,565.00 | 84,358.40 |

TABLE NO. 26

CONTRACT DATA 1970-71

| Contract No. | Title of Contract | Division | No. of Bidders | Contractor | Date of Award | Date of Completion | % Complete 6-30-71 | Bid Price | Total Cost to 6-30-71 |
|---|---|---|---|---|---|---|---|---|---|
| 1448 | Alterations to 425 Mason St. Building - San Francisco | General | 12 | Madsen Constr. Company | 4-13-71 | | 32 | $ 41,525.25 | $ 12,098.84 |
| 1450 | Construction of 60" Crystal Springs Pipeline No. 3, Hillsborough to Millbrae | Peninsula | 3 | Underground Construction Company, Inc. | 3-10-70 | | 92 | 1,996,482.00 | 1,673,347.16 |
| 1453 | Lay 24" Hunter's Point Feeder Main and Related Work | C.D.D. | 8 | Associated Pipeline, Inc. & Louis L. Cima, Inc. a Joint Venture | 4-14-70 | 2-12-71 | 100 | 480,895.00 | 481,797.55 |
| 1454R | Construct Fence (in Alameda County) | Alameda | 5 | Anchor Post Products, Inc. | 1-26-71 | 3-30-71 | 100 | 8,960.00 | 8,744.00 |
| 1455 | Rehabilitate Portion of Sunol Water Supply System (in Alameda County) | Alameda | 18 | Silva's Pipeline, Inc. | 12-8-70 | 1-29-71 | 100 | 19,950.00 | 19,900.50 |
| 1456 | Excavation and Repaving for Water Service Trenches | C.D.D. | 3 | Lowrie Paving Company, Inc. | 5-26-70 | 8-26-70 | 100 | 112,510.00 | 113,759.50 |
| 1457 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | Bepco, Inc. | 6-23-70 | 11-18-70 | 100 | 101,237.50 | 101,384.85 |
| 1458 | Excavation and Repaving for Water Service Trenches | C.D.D. | 5 | Lowrie Paving Company, Inc. | 7-14-70 | 11-2-70 | 100 | 100,989.00 | 103,881.80 |
| 1459 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | McGuire & Hester | 8-25-70 | 1-11-71 | 100 | 141,640.00 | 120,099.20 |
| 1460 | Repaving Roads to Calaveras and Alameda East Cottages (Alameda County) | Alameda | 4 | Eugene G. Alves Constr. Company, Inc. | 5-26-70 | 7-20-70 | 100 | 11,145.00 | 10,262.75 |

TABLE NO. 26

CONTRACT DATA 1970-71

| Contract No. | Title of Contract | Division | No. of Bidders | Contractor | Date of Award | Date of Completion | % Complete 6-30-71 | Bid Price | Total Cost to 6-30-71 |
|---|---|---|---|---|---|---|---|---|---|
| 1461 | Repaving Roads at Millbrae Yard (San Mateo County) | Peninsula | 7 | Fisk, Firenze & McLean, Inc. | 5-26-70 | 7-2-70 | 100 | $ 8,642.00 | $ 8,471.00 |
| 1464 | Relocation of Electrical Lines at Canada Road Near Route 92 (San Mateo County) | Peninsula | 2 | Mahoney Electric Co., Inc. | 6-23-70 | 9-30-70 | 100 | 6,882.00 | 6,642.80 |
| 1465 | Lay 12" DIM in Northpoint St., Taylor to The Embarcadero | C.D.D. | 6 | Vukasin & Rigisich | 4-28-70 | 9-9-70 | 100 | 75,468.00 | 76,204.70 |
| 1467 | Annual Repaving Contract - Fiscal Year Ending 6-30-71 | C.D.D. | 3 | Pacific Pavements Co., Ltd. | 5-26-70 | 6-30-71 | 100 | 328,800.00 | 278,182.20 |
| 1468 | Lay 8", 12" and 16" DIM in Clarendon, Palo Alto Avenue and Other Streets | C.D.D. | 5 | Associated Pipeline, Inc. | 4-17-70 | 7-25-70 | 100 | 88,141.00 | 94,853.41 |
| 1469 | Lay 6" DIM in Webster and McAllister Streets | C.D.D. | 5 | W. L. Fairey | 7-28-70 | 10-9-70 | 100 | 37,552.00 | 37,209.10 |
| 1470 | Reconstruction at Wilde Ave. Reservoir in McLaren Park | General | 2 | O. C. Jones & Sons | 9-22-70 | 12-8-70 | 100 | 17,415.00 | 17,035.00 |
| 1471 | Lay 6" and 8" Ductile and C. I. Mains in Sloat Blvd. Between Middlefield Drive and 20th Avenue | C.D.D. | 5 | Lowrie Paving Company, Inc. | 7-14-70 | 10-6-70 | 100 | 64,090.28 | 65,995.97 |
| 1472 | Rehabilitate Chain Link Fence at University Mound Res. | General | 3 | Oakland Fence Company, Inc. | 7-14-70 | 10-19-70 | 100 | 14,768.90 | 15,375.60 |
| 1473 | Lay 8" DIM in Market and Valencia Streets | C.D.D. | 4 | Lowrie Paving Company, Inc. | 7-28-70 | 12-9-70 | 100 | 72,052.50 | 75,658.35 |

TABLE NO. 26

CONTRACT DATA 1970-71

| Contract No. | Title of Contract | Division | No. of Bidders | Contractor | Date of Award | Date of Completion | % Complete 6-30-71 | Bid Price | Total Cost to 6-30-71 |
|---|---|---|---|---|---|---|---|---|---|
| 1474 | Lay 6" and 8" DIM in 23rd Avenue, Geary St., and Others | C.D.D. | 6 | Lowrie Paving Company, Inc. | 11-24-70 | 3-30-71 | 100 | $ 82,442.00 | $ 84,238.90 |
| 1475 | Pilarcitos Dam Repair in San Mateo County | Peninsula | 2 | McGuire and Hester | 9-8-70 | 12-7-70 | 100 | 114,750.00 | 80,178.00 |
| 1476 | Conversion of Pilarcitos Power Line to Three Phase | Peninsula | 3 | Steiny and Company, Inc. | 5-28-70 | 8-13-70 | 100 | 14,100.00 | 18,950.00 |
| 1477 | Painting Lake Merced Pumping Station and Lincoln Park Pump Station No. 2 | General | 6 | Beck Bros. | 12-8-70 | 3-15-71 | 100 | 7,465.00 | 7,465.00 |
| 1478 | Painting Forest Hill Tanks | General | 2 | Mel Barnes Company | 7-14-70 | 11-4-70 | 100 | 10,487.00 | 10,487.00 |
| 1479 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | Bepco, Inc. | 9-22-70 | 2-2-71 | 100 | 82,330.00 | 87,557.65 |
| 1480 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | Associated Pipeline, Inc. | 11-24-70 | 3-19-71 | 100 | 98,495.00 | 101,515.70 |
| 1481 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | Associated Pipeline, Inc. | 1-26-71 | 5-25-71 | 100 | 92,255.00 | 78,418.65 |
| 1483 | Additions to Alameda Division Headquarters Building | Alameda | 5 | Roy E. Carter | 11-24-70 | 5-18-71 | 100 | 13,315.00 | 13,315.00 |
| 1484 | Lay 6" DIM in Webster Street Between Grove & McAllister Sts. | C.D.D. | 7 | Lowrie Paving Company, Inc. | 4-13-71 | 6-18-71 | 100 | 17,895.00 | 17,907.15 |
| 1485 | Installation of Control Valves at Calaveras Aerator | Alameda | 6 | E. H. Morrill Company | 12-22-70 | | | 69,993.00 | -0- |

TABLE NO. 26

CONTRACT DATA 1970-71

| Contract No. | Title of Contract | Division | No. of Bidders | Contractor | Date of Award | Date of Completion | % Complete 6-30-71 | Bid Price | Total Cost to 6-30-71 |
|---|---|---|---|---|---|---|---|---|---|
| 1486 | Lay 4" and 6" DIM in Dolores Street Between Market and 26th Streets | C.D.D. | 6 | Lowrie Paving Company, Inc. | 12-22-70 | 4-27-71 | 100 | $ 92,948.50 | $ 95,083.20 |
| 1487 | Relocation of Pipelines and Appurtenances North of Baden Pump Station | Peninsula | 7 | Hood Corp. | 11-24-70 | | 93 | 192,980.00 | 162,117.99 |
| 1488 | (D.P.W. Contract) | | | | | | | | |
| 1489 | Lay 12" DI, 16" DI, 20" Steel and 24" Steel Mains in Lyon St. Between Washington and Clay Sts. | C.D.D. | 6 | Alf Burtleson Construction Co. | 10-27-70 | 3-9-71 | 100 | 46,078.00 | 45,820.16 |
| 1490 | Painting La Grande Tank | General | 4 | Orrell-Keefe, Inc. | 8-25-70 | 10-26-70 | 100 | 7,460.00 | 7,460.00 |
| 1491 | D.P.W. | | | | | | | | |
| 1492 | Lay 6" DIM in Pennsylvania St. Between 22nd and 23rd Streets | C.D.D. | 6 | McGuire and Hester | 12-8-70 | 2-1-71 | 100 | 11,661.00 | 11,511.55 |
| 1493 | Cement Mortar Line 20", 22" & 24" Pipe in Masonic, Geary, Lyon and Other Streets | C.D.D. | 2 | Pipe Linings, Inc. | 10-27-70 | 1-26-71 | 100 | 152,492.00 | 149,058.60 |
| 1494 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | Lowrie Paving Company, Inc. | 12-22-70 | 5-11-71 | 100 | 93,410.00 | 96,433.90 |
| 1495 | Excavation and Repaving for Water Service Trenches | C.D.D. | 4 | Bepco, Inc. | 4-27-71 | | -0- | 42,444.00 | -0- |

TABLE NO. 26

CONTRACT DATA 1970-71

| Contract No. | Title of Contract | Division | No. of Bidders | Contractor | Date of Award | Date of Completion | % Complete 6-30-71 | Bid Price | Total Cost to 6-30-71 |
|---|---|---|---|---|---|---|---|---|---|
| 1498 | Lay 12" and 16" DIM in Gilman Avenue and Giants Drive | C.D.D. | 7 | Slavo Rigisich Inc. | 3-9-71 | 5-14-71 | 100 | $ 36,054.00 | $ 36,727.80 |
| 1500 | Clean and Recoat Bay Division Pipelines No. 1 & No. 2 Betw. Newark Slough etc. | Alameda | 5 | Clark Painting Company | 4-27-71 | | 13 | 147,840.00 | 17,399.16 |
| 1503 | D.P.W. Contract | | | | | | | | |
| 1504 | Motorized Valves at Various Locations | General | 3 | Bayside Pump & Engineering Co. | 2-23-71 | | -0- | 19,000.00 | -0- |
| 1505 | Construction of Bay Division Pipeline No. 4, Section C | Peninsula | 10 | Hood Corp. | 6-22-71 | | -0- | 5,567,100.00 | -0- |
| 1513 | Lay 4", 8" and 12" DIM in Mission Street and The Embarcadero | C.D.D. | 7 | Lowrie Paving Company, Inc. | 4-27-71 | | 28 | 44,913.75 | 5,327.55 |
| 1518 | Annual Repaving Contract - Fiscal Year Ending 6-30-72 | C.D.D. | 3 | Pacific Pavements, Co., Ltd. | 4-27-71 | | -0- | 362,000.00 | -0- |
| 1519 | Lay 6" DIM in Alder Street Between Ankeny and Harkness Streets | C.D.D. | 2 | W. L. Fairey | 5-25-71 | | -0- | 10,425.00 | -0- |
| 1525 | Lay 6" DIM in Stanyan Street Between Grove and Hayes Sts. | C.D.D. | 5 | Lowrie Paving Company, Inc. | 6-22-71 | | -0- | 10,085.00 | -0- |

## INFORMAL CONTRACTS:

Informal Contract I-172 - For construction of main gate at Millbrae, California. The contract was awarded to Cyclone Fence, U. S. Steel Corporation on May 5, 1970 at a lump sum price of $3,900. Work was completed on August 5, 1970.

Informal Contract I-174R - For constructing concrete floor slab for garage at Sunol Yard in Alameda County. The contract was awarded to Deetz Construction Co., Inc. on October 14, 1970 at a lump sum price of $1,671. Work was completed on December 16,1970.

Informal Contract I-175 - For reroofing Niles Cottage and Sunol Utility Building in Alameda County. The contract was awarded to Bay Area Re-Roofing Co. on September 29, 1970 at a lump sum price of $1,020. Work was completed on December 1, 1970.

Informal Contract I-176 - No contract executed.

Informal Contract I-177 - For constructing grating at Pulgas Temple in San Mateo County. The contract was awarded to Ashby Metal Products, Inc. on June 16, 1971 at a lump sum price of $3,389. Grating is being fabricated at the Contractor's shop.

Informal Contract I-178 - For rehabilitation of Pleasanton Well No. 0-1 in Alameda County. The contract was awarded to Western Well Drilling Co., Ltd. on April 23, 1971 at an estimated price of $1,032. Work was completed on May 10, 1971 at a total cost of $712.

## LANDS, LEASES AND PERMITS

### LAND TRANSACTIONS:

On June 30, 1970 there were 62,953.959 acres of land owned by the Department. There were no purchases but 0.960 acres were sold during this fiscal year, leaving 62,952.999 acres owned by the Department on June 30, 1971.

Detailed purchases and sales are:

| | PURCHASES (Acres) | SALES (Acres) |
|---|---|---|
| PURCHASES | -0- | |
| SALES | | |
| Parcel 57 - Mayhew Tract Parcel 9 | | 0.960 |
| Net Decrease in Acres | | 0.960 |

### LEASES AND PERMITS:

During the fiscal year 90 revocable permits were prepared and 7 were cancelled. Seven leases were prepared.

The preparation of legal descriptions of real property and accompanying maps showing the boundaries and location of property to be leased, disposed of or acquired, totaled some 49 parcels this year. Revocable permits with appropriate terms and conditions, with accompanying maps, totaling 90 were prepared. There were 24 court actions in connection with condemnations and quieting of title actions for which 29 exhibits and the supporting data were prepared. All of this work mentioned above is done in the Engineering Division where extensive records of the Department's real property are maintained.

LAND AND AGRICULTURE:

| 1970-71 | |
|---|---|
| Miscellaneous Income from Rentals . . | $ 622,014 |
| Walnuts . . . . . | 25,500 |
| TOTAL | $ 647,514 |

TAXES:

The Department paid total property taxes in other counties as follows:

| | |
|---|---|
| In Alameda County . . . . . | $ 674,494 |
| In Santa Clara County . . . . . | 189,632 |
| In San Mateo County . . . . . | 644,962 |
| Total taxes paid in other counties | $1,509,088 |

## ACCOUNTING AND AUDITING

The accounts of the San Francisco Water Department are maintained strictly in accordance with the requirements of the California State Public Utilities Commission and Section 64 of the City Charter. The accounts of the Department have been so coordinated with the Controller's system that no encumbrance or expenditure against budget estimates can be incurred without prior certification from the Controller that funds are available. As provided in Ordinance 9.0621, an annual audit of the Department is made as of June 30 by a firm of certified public accountants.

Operating Expenses show a net increase of $3,128,821.62 as shown by the following tabulation.

| OPERATING REVENUE DEDUCTIONS | Increase | Decrease |
|---|---|---|
| Source of Supply | $ 158,192.44 | |
| Pumping Expenses | 34,702.63 | |
| Purification Expenses | | $ 17,177.16 |
| Transmission & Distributions Expenses | 255,541.92 | |
| Customers Accounts Expenses | 48,953.24 | |
| Administrative and General | 127,465.38 | |
| *Municipal Taxes, Comparison | 179,217.19 | |
| Miscellaneous Expenses | 37,812.38 | |
| Taxes Actual | 167,870.60 | |
| Provision for Depreciation | 136,243.00 | |
| Standby Charge & Purchase of Water | 2,000,000.00 | |
| Net Increase | | 3,128,821.62 |
| | $3,145,998.78 | $3,145,998.78 |

*Water delivered to Municipal Departments offset by taxes.

An analysis of Revenue and Operating Expenses is shown in the following Exhibits "A" through "E".

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT
EXHIBIT A

BALANCE SHEET
JUNE 30, 1971

## ASSETS AND OTHER DEBITS

| | | |
|---|---|---|
| **UTILITY PLANT** | | |
| Water Plant in Service | $ 188,087,055.00 | |
| Less Reserve for Depreciation | 57,214,407.00 | $ 130,872,648.00 |
| Construction Work in Progress: | | |
| Water Department | 3,271,106.68 | |
| 1961 Bond Fund | 3,036,244.58 | 6,307,351.26 |
| TOTAL UTILITY PLANT | | $ 137,179,999.26 |
| **CURRENT AND ACCRUED ASSETS** | | |
| Cash | $ 18,142,777.37 | |
| Accounts Receivable | | |
| $ 3,042.321.96 | | |
| Less Reserve for Uncollectible Accounts 12,000.00 | 3,030,321.96 | |
| Notes Receivable | 45,615.50 | |
| Interfund Accounts Receivable | 126,274.53 | |
| Materials and Supplies | 773,717.58 | |
| TOTAL CURRENT AND ACCRUED ASSETS | | $ 22,118.706.94 |
| **DEFERRED DEBITS** | | |
| Work in Progress | $ 79,806.99 | |
| Suspense Debits | 8,967,302.92 | |
| Encumbrances (Contra) | 6,390,655.88 | |
| TOTAL DEFERRED DEBITS | | 15,437,765.79 |
| TOTAL ASSETS AND OTHER DEBITS | | $ 174,736,471.99 |

## LIABILITIES AND OTHER CREDITS

| | | |
|---|---|---|
| **LONG-TERM DEBT** | | |
| Bonds | | $ 36,287,245.00 |
| **CURRENT AND ACCRUED LIABILITIES** | | |
| Customers' Deposits | 56,494.51 | |
| Accounts Payable | 2,547,035.46 | |
| Interfund Accounts Payable | 563,000.87 | |
| Matured Long Term Debt - 1928 Bond | 13,000.00 | |
| Matured Interest - 1928 Bond | 3,535.00 | |
| Interest Accrued - 1928 Bond | | |
| TOTAL CURRENT & ACCRUED LIABILITIES | | 3,183,085.84 |
| **DEFERRED CREDITS** | | |
| Suspense Credits | 3,529,684.34 | |
| Advances for Construction | 44,071.62 | |
| Orders for Work - Cash Advances | 100,550.78 | |
| Orders for Work - Accounts Receivable | 526,228.40 | |
| Orders for Work - Other Departments | 1,575,472.87 | |
| Orders for Work - Stock Manufacture | 4,234.15 | |
| Rental Deposits & Payments made in Advance | 7,085.00 | |
| TOTAL DEFERRED CREDITS | | 5,788,327.16 |
| **RESERVES** | | |
| Injuries and Damages Reserve | $ 75,000.00 | |
| Reserve for Refunds | | |
| Funded $ 59,584.02 | | |
| Unfunded 212,782.41 | 272,366.43 | |
| Reserve for Contractors Damage Claims | 3,999.91 | |
| Reserve for Encumbrances (Contra) | 6,390,655.88 | |
| TOTAL RESERVES | | 6,742,022.22 |
| **SURPLUS** | | |
| Surplus | | 122,735,791.77 |
| TOTAL LIABILITIES AND OTHER CREDITS | | $ 174,736,471.99 |

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT B

COMPARATIVE INCOME STATEMENT
TWELVE MONTHS ENDING JUNE 30, 1971

| TITLE | FISCAL YEAR 1970-1971 | FISCAL YEAR 1969-1970 | 1970-1971 INCREASE (DECREASE) | MARCH 3, 1930 TO JUNE 30, 1971 |
|---|---|---|---|---|
| OPERATING INCOME | | | | |
| Sale of Water | $ 26,264,218.10 | $ 23,402,626.59 | $ 2,861,591.51 | $ 519,804,511.19 |
| OPERATING REVENUE DEDUCTIONS | | | | |
| Operating Expenses | 12,107,034.18 | 11,461,543.35 | 645,490.83 | 179,009,065.26 |
| Purchase of Water | 4,500,000.00 | 2,500,000.00 | 2,000,000.00 | 102,346,061.92 |
| Depreciation | 2,750,374.00 | 2,614,131.00 | 136,243.00 | 53,613,130.46 |
| Taxes - Actual | 1,482,550.86 | 1,324,680.26 | 167,870.60 | 25,267,767.93 |
| TOTAL OPERATING REVENUE DEDUCTIONS | $ 20,839,009.04 | $ 17,900,404.61 | $ 2,939,604.43 | $ 360,236,025.57 |
| UTILITY OPERATING INCOME | 5,425,209.06 | 5,502,221.98 | (88,012.92) | 159,563,485.62 |
| OTHER INCOME | 1,532,206.96 | 1,701,861.80 | (169,654.84) | 25,108,415.08 |
| GROSS INCOME | 6,946,416.02 | 7,204,083.78 | (257,667.76) | 184,676,900.70 |
| INCOME DEDUCTIONS | 1,100,620.29 | 1,189,160.91 | (88,540.62) | 50,892,644.69 |
| INCOME TRANSFERRED TO EARNED SURPLUS | $ 5,845,795.73 | $ 6,014,922.87 | $ (169,127.14) | $ 133,784,256.01 |

| | | |
|---|---|---|
| House Rent | 15,628.00 | |
| Rents - Including Share-Crops. | 622,013.57 | |
| Contractor's Damage Claims | (887.37) | |
| Interest Revenue | 191,659.23 | |
| Turn-On Fees | 5,353.00 | |
| Fixed Asset Sales | 14,559.74 | |
| Miscellaneous | 698,890.79 | |
| Walnut Orchard | 25,000.00 | |
| TOTAL OTHER INCOME | | $ 1,532,206.96 |
| Non-Operating Revenue Deduct. | 75,756.91 | |
| Interest on Long-Term Debt | 1,024,863.38 | |
| TOTAL INCOME DEDUCTIONS | | $ 1,100,620.29 |

| | 1961 M.W.S. BOND FUND | S.F.W.D. | TOTAL |
|---|---|---|---|
| SURPLUS - JUNE 30, 1970 | $ 5,938,116.90 | $110,948,496.70 | $ |
| ADD: | | | |
| Adjustment of Prior Year Surplus | | 3,382.54 | |
| Bonds Sold (Series I) | 2,938,225.00 | | |
| Net Income for Twelve Months ending June 30, 1971 | | 5,845,795.73 | |
| Completed Contracts Capitalized, Contract 1469 | | 35,502.00 | |
| Equipment Transfer | | 11,153.75 | |
| Interest capitalized by Bond Fund | 227,284.80 | | |
| Prepaid interest on Series I | | 10,669.41 | |
| Transfer of Completed Contracts | | 1,550,283.04 | |
| | 9,103,626.70 | 118,405,283.07 | |
| DEDUCT: | | | |
| Book Value of Plant Appraisal - June 30, 1968 | | | |
| Interest capitalized by Bond Fund | | 227,284.80 | |
| Bonds Sold (Series I) | | 2,938,225.00 | |
| Completed Contracts Capitalized | | | |
| Equipment Transfer | 11,153.75 | | |
| Cancellation of Capitalizing Contract 1469 Shown Above | | 35,502.00 | |
| Transfer of Completed Contracts | 1,550,283.04 | | |
| Prepaid Interest on Series I | 10,669.41 | | |
| SURPLUS - JUNE 30, 1971 | $ 7,531,520.50 | $115,204,271.27 | $ 122,735,791.77 |



EXHIBIT D

COMPOSITION OF SURPLUS - CONDENSED

JUNE 30, 1971

| | | | |
|---|---|---|---|
| INITIAL SURPLUS - MARCH 3, 1930 | | | |
| | $ 4,152,652.24 | | |
| Amortization on Contribution (Spring Valley) | 100,000.00 | | |
| Valuation of Municipal Water Works | 4,252,652.24 | | |
| LESS: | | | |
| Additional allowance for Depreciation - March 1, 1920 to March 3, 1930 | 2,327,916.67 | 1,924,735.57 | |
| ADDITIONS: | | | |
| Net Income - March 3, 1930 to June 30, 1971 | 133,784,256.01 | | |
| Miscellaneous and year to year adjustments | 6,830,335.19 | | |
| Contributions from Hetch Hetchy Power Division | 409,471.41 | | |
| Contributions from 1947 Hetch Hetchy Water Bond Fund | 290,516.71 | 141,314,579.32 | |
| Grants earned on Federal Public Works Project | | 2,358,987.60 | |
| Book Value of Plant Appraisal - June 30, 1948 | | 83,864.03 | 145,682,166.52 |
| DEDUCTIONS: | | | |
| Contributed to General Fund | | 15,922,457.24 | |
| Contributed to Hetch Hetchy Water Supply | | 4,466,014.40 | |
| Lands contributed to City and County of San Francisco for streets and boulevards | | 172,564.67 | |
| Excess of adjusted book value of plant appraisal, December 31, 1937 | -1,990,474.91 | | |
| Excess of adjusted book value of plant appraisal, June 30, 1953 | 138,291.42 2,178,766.33 | | |
| Book value of plant appraisal, June 30, 1958 | 89,383.93 | | |
| Book Value of plant appraisal, June 30, 1963 | 91,365.18 | | |
| Book value of plant appraisal, June 30, 1968 | 25,823.00 | 2,385,338.44 | 22,946,374.75 |
| SURPLUS - JUNE 30, 1971 | | | $ 122,735,791.77 |

EXHIBIT E

COMPARATIVE INCOME STATEMENT
JUNE 30, 1971

| TITLE | FISCAL YEAR 1970-1971 | FISCAL YEAR 1969-1970 | 1970-1971 INCREASE (DECREASE) | MARCH 3,1930 TO JUNE 30, 1971 |
|---|---|---|---|---|
| OPERATING INCOME | | | | |
| Sale of Water | | | | |
| Water Sales - San Francisco | $ 12,795,107.80 | $ 11,292,893.24 | $ 1,502,214.56 | |
| Water Sales - Outside San Francisco | 11,852,851.75 | 10,696,792.93 | 1,166,058.82 | |
| Water Sales - Municipal Departments - Actual | 113,606.32 | 99,505.38 | 14,100.94 | |
| Water Sales - Municipal Departments - Comparisor | 1,492,652.23 | 1,313,435.04 | 179,217.19 | |
| TOTAL WATER SALES | 26,264,218.10 | 23,402,626.59 | 2,861,591.51 | $ 519,804,511.19 |
| OPERATING REVENUE DEDUCTIONS | | | | |
| Source of Supply | | | | |
| Operation, Supervision and Engineering | 131,721.17 | 116,064.14 | 15,657.03 | |
| Operation, Labor and Expense | 571,758.71 | 535,673.25 | 36,085.46 | |
| Miscellaneous Expenses | 898.23 | 904.54 | (6.31) | |
| Maintenance, Supervision, and Engineering | (156.43) | 324.29 | (480.72) | |
| Maintenance of Structure and Improvements | 80,838.23 | 74,802.31 | 6,035.92 | |
| Maintenance of Collecting and Impounding Reservoirs | 328,910.02 | 261,144.75 | 67,765.27 | |
| Maintenance of Lake, River, and Other Intakes | 459.57 | 1,555.23 | (1,095.66) | |
| Maintenance of Springs and Tunnels | 1,542.17 | 3,822.91 | (2,280.74) | |
| Maintenance of Wells | 2,596.34 | 408.40 | 5,187.94 | |
| Maintenance of Supply Mains | 125,412.63 | 78,892.01 | 52,520.85 | |
| Maintenance of Other source of Supply Plant | 50.72 | 1,226.34 | (1,175.62) | |
| TOTAL SOURCE OF SUPPLY EXPENSES | 1,233,031.41 | 1,074,838.97 | 158,192.44 | 20,689,018.93 |
| Pumping Expenses | | | | |
| Pumping Labor and Expenses | 161,660.61 | 146,797.10 | 14,863.51 | |
| Miscellaneous Supplies and Expenses | 2,180.27 | 2,421.09 | (240.82) | |
| Fuel or Power Purchased for Pumping | 315,190.97 | 314,407.04 | 783.93 | |
| Maintenance, Supervision, and Engineering | - 0 - | 194.92 | (194.92) | |
| Maintenance of Structures and Improvements | 10,772.27 | 16,959.91 | (6,187.64) | |
| Maintenance of Primary Pumping Equipment | 444.40 | 15,752.91 | (15,308.51) | |
| Maintenance of Pumping Equipment | 63,980.18 | 16,038.39 | 47,941.79 | |
| Gardening | 12,420.69 | 20,375.40 | (6,954.71) | |
| TOTAL PUMPING EXPENSES | 567,649.39 | 532,946.76 | 34,702.63 | 13,805,102.62 |
| Purification Expense Accounts | | | | |
| Operation, Supervision and Engineering | 122,294.79 | 99,745.91 | 22,548.88 | |
| Operation, Labor, and Expenses | 386,310.48 | 394,216.49 | (7,906.01) | |
| Miscellaneous Expenses | 32,969.45 | 206.80 | 32,762.65 | |
| Supplies an Expenses | 294,428.27 | 350,292.79 | (55,864.52) | |
| Maintenance, Supervision and Engineering | - 0 - | - 0 - | - 0 - | |
| Maintenance of Structures and Improvements | 41,643.95 | 45,878.77 | (4,234.82) | |
| Maintenance of Water Treatment Equipment | 20,022.35 | 24,501.79 | (4,479.44) | |
| TOTAL PURIFICATION EXPENSES | 897,669.39 | 914,842.55 | (17,177.16) | 9,491,139.88 |

COMPARATIVE INCOME STATEMENT
JUNE 30, 1971

| TITLE | FISCAL YEAR 1970-1971 | FISCAL YEAR 1969-1970 | 1970-1971 INCREASE (DECREASE) | MARCH 3, 1930 TO JUNE 30, 1971 |
|---|---|---|---|---|
| OPERATING REVENUE DEDUCTIONS ( Cont'd.) | | | | |
| Transmission and Distribution Account | | | | |
| Operation, supervision, and Engineering | $ 285,117.19 | $ 277,233.63 | $ 27,883.56 | |
| Storage Facilities Expenses | 49,453.05 | 45,924.38 | 32,528.67 | |
| Transmission and Distribution Lines Expenses | 215,832.48 | 236,368.44 | (20,535.96) | |
| Meter Expenses | 538,180.20 | 542,091.69 | (3,911.49) | |
| Customer Installation Expenses | 425,275.50 | 394,957.35 | 30,318.15 | |
| Miscellaneous | 71,588.95 | 18,525.96 | 53,063.01 | |
| Operating Expenses - City Yard | 314,243.07 | 293,491.30 | 20,751.77 | |
| Maintenance, Supervision and Engineering | 20,496.85 | 5,100.00 | 15,396.85 | |
| Maintenance of Structures and Improvements | 151,586.99 | 129,397.15 | 22,189.84 | |
| Maintenance of Reservoirs and Tanks | 107,274.02 | 88,648.75 | 18,625.27 | |
| Maintenance of Transmission Lines and Canals | 164,801.21 | 143,954.85 | 20,849.36 | |
| Maintenance of Services | 860,500.75 | 888,910.92 | (28,410.17) | |
| Maintenance of Miscellaneous Plant | 124,394.70 | 86,593.92 | 37,852.78 | |
| Maintenance of Distribution Mains, Canals, etc. | 1,015,282.94 | 1,018,156.41 | (2,873.47) | |
| Reconditioning of Salvaged Materials | .00 | 3,629.73 | (3,629.73) | |
| Recoverable Claims - Mains and Services | 42,206.26 | 7,829.60 | 35,076.68 | |
| TOTAL TRANSMISSION & DISTRIBUTION ACCOUNTS | 4,167,196.38 | 3,911,654.46 | 255,541.92 | $ 48,026,369.06 |
| Customers' Accounts Expenses | | | | |
| Meter Reading Expenses | 136,227.74 | 130,258.66 | 5,969.08 | |
| Customer Records and Collection Expenses | 207,433.95 | 178,008.24 | 29,425.71 | |
| Miscellaneous Customer Accounts Expenses | 183,601.03 | 201,842.06 | (18,241.03) | |
| Inspection and Service | 212,671.19 | 200,178.56 | 12,492.63 | |
| Bookkeeping Department | 223,759.83 | 190,835.39 | 32,924.44 | |
| Shipping | 6,408.81 | 19,026.40 | (12,617.59) | |
| TOTAL CUSTOMERS' ACCOUNTS EXPENSES | 969,102.55 | 920,149.31 | 48,953.24 | 23,390,848.02 |
| Administrative and General | | | | |
| Salaries - General Officers | 42,370.96 | 42,151.83 | 219.13 | |
| Salaries - General Office | 221,506.02 | 208,661.07 | 12,844.95 | |
| General Engineering | 427,082.00 | 381,582.07 | 45,499.93 | |
| Resources and Planning | 38,680.95 | 37,894.74 | 786.21 | |
| Office Supplies and other Expenses | 28,985.70 | 33,716.97 | (4,730.27) | |
| Telephone Service | 84,048.68 | 82,852.77 | 1,195.91 | |
| Mason Street Operating Expenses | 95,869.23 | 90,063.75 | 5,805.48 | |
| Municipal Taxes - Comparison | 1,492,857.06 | 1,313,442.04 | 179,415.02 | |
| Outside Services Employed | 394.25 | 2,019.24 | (1,625.99) | |
| Insurance - Compensation | 45,679.67 | 59,901.23 | (14,221.56) | |
| Insurance - Other | 29,271.77 | 15,292.87 | 3,978.90 | |
| Injuries and Damages | 27,095.23 | 23,137.42 | 3,957.81 | |
| Pensions | 676,713.70 | 652,352.41 | 24,361.29 | |
| Social Security | 218,170.87 | 205,930.35 | 12,240.52 | |
| Electronic Data Processing | 204,412.84 | 358,234.07 | (153,821.23) | |
| Public Utilities Commission | 349,104.00 | 301,700.99 | 47,403.01 | |
| Maintenance to Telephone System | 7,828.21 | 9,237.06 | (1,408.85) | |
| Maintenance to 425 Mason Street Building | 20,097.33 | 20,213.36 | (116.03) | |
| Maintenance to Radio System | 12,172.58 | 9,231.48 | 2,941.10 | |
| Inventory Expense - Maintenance | (759.60) | 14,009.78 | (14,769.38) | |
| Maintenance of Non-Operative Property | 1,830.07 | 515.68 | 1,314.39 | |
| Miscellaneous Maintenance | 157,277.45 | 181,092.41 | (23,814.96) | |
| TOTAL ADMINISTRATIVE & GENERAL EXPENSES | $ 4,170,689.97 | $ 4,043,224.59 | $ 127,465.38 | $ 62,306,230.62 |

PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

EXHIBIT E (Cont'd.)
COMPARATIVE INCOME STATEMENT
JUNE 30, 1971

| TITLE | FISCAL YEAR 1970-1971 | FISCAL YEAR 1969-1970 | 1970 - 1971 INCREASE (DECREASE) | MARCH 3, 1930 TO JUNE 30, 1971 |
|---|---|---|---|---|
| OPERATING REVENUE DEDUCTIONS (Cont'd.) | | | | |
| Miscellaneous Expenses | | | | |
| Uncollectible Water Bills | $ 31,299.06 | $ 22,702.75 | $ 8,596.31 | |
| Provision for Contingent Funds | 23,675.71 | 28,928.81 | (5,253.10) | |
| Undistributed Operating Expenses | 46,774.32 | 12,305.15 | 34,469.17 | |
| TOTAL MISCELLANEOUS EXPENSES | 101,749.09 | 63,936.71 | 37,812.38 | $ 1,300,356.11 |
| TOTAL OPERATING REVENUE DEDUCTIONS | 12,107,084.18 | 11,461,593.35 | 645,490.83 | 179,009,065.26 |
| OPERATING EXPENSES | | | | |
| Purchase of Water | 4,500,000.00 | 2,500,000.00 | 2,000,000.00 | |
| Depreciation | 2,750,374.00 | 2,614,131.00 | 136,243.00 | |
| Taxes - Actual | 1,492,550.86 | 1,324,680.26 | 167,870.60 | |
| TOTAL OPERATING EXPENSES | 8,742,924.86 | 6,438,811.26 | 2,304,113.60 | 181,226,960.31 |
| UTILITY OPERATING INCOME | 5,414,209.06 | 5,502,221.98 | (88,012.92) | 159,568,485.62 |
| OTHER INCOME | | | | |
| Rentals, including Crop Shares | 622,013.57 | 712,191.54 | (90,177.97) | |
| Walnut Orchard Sales | 25,000.00 | 28,058.51 | (3,058.51) | |
| Miscellaneous | 718,974.42 | 758,259.24 | (39,284.82) | |
| Interest Earned | 151,659.23 | 191,185.51 | (39,526.28) | |
| Sales of Real Estate and Fixed Assets | 14,559.74 | 12,167.00 | 2,392.74 | |
| TOTAL OTHER INCOME | 1,532,206.96 | 1,701,861.80 | (169,654.84) | 25,108,415.08 |
| GROSS INCOME | 6,946,416.02 | 7,204,083.78 | (257,667.76) | 184,676,900.70 |
| INCOME DEDUCTIONS | | | | |
| Agricultural Division | 75,756.91 | 92,909.62 | (17,152.71) | |
| Interest on Long-Term Debt | 1,024,863.38 | 1,096,251.29 | (71,387.91) | |
| TOTAL INCOME DEDUCTIONS | 1,100,620.29 | 1,189,160.91 | (88,540.62) | 50,892,644.69 |
| NET INCOME TRANSFERRED TO SURPLUS | $ 5,845,795.73 | $ 6,014,922.87 | $ (169,127.14) | $ 133,784,256.01 |

## BOND REDEMPTION AND INTEREST

## WATER DEPARTMENT

| | REDEMPTION | INTEREST | |
|---|---|---|---|
| | Muni Water System 1961 | Muni Water System 1961 | Total Redemption plus Interest |
| 1970-71 | 1,799,962 | 1,203,380 | 3,003,342 |
| 1971-72 | 2,108,529 | 1,260,237 | 3,368,766 |
| 1972-73 | 2,451,377 | 1,185,863 | 3,637,240 |
| 1973-74 | 2,564,521 | 1,091,635 | 3,656,156 |
| 1974-75 | 2,564,517 | 992,534 | 3,557,051 |
| 1975-76 | 2,564,518 | 896,409 | 3,460,927 |
| 1976-77 | 2,567,945 | 807,835 | 3,375,780 |
| 1977-78 | 2,567,946 | 722,622 | 3,290,568 |
| 1978-79 | 2,564,516 | 637,209 | 3,201,725 |
| 1979-80 | 2,564,519 | 551,618 | 3,116,137 |
| 1980-81 | 2,564,516 | 465,761 | 3,030,277 |
| 1981-82 | 2,564,519 | 379,755 | 2,944,274 |
| 1982-83 | 2,324,521 | 293,282 | 2,617,803 |
| 1983-84 | 1,436,542 | 213,914 | 1,650,456 |
| 1984-85 | 1,436,542 | 159,908 | 1,596,450 |
| 1985-86 | 1,350,831 | 106,919 | 1,457,750 |
| 1986-87 | 1,069,692 | 69,358 | 1,139,050 |
| 1987-88 | 469,706 | 47,865 | 517,571 |
| 1988-89 | 263,994 | 26,976 | 290,970 |
| 1989-90 | 143,997 | 14,400 | 158,397 |
| 1990-91 | 143,997 | 7,200 | 151,197 |
| | 38,087,207 | 11,134,680 | 49,221,887 |

### ORIGINAL AMOUNT AND INTEREST RATE

48,000,000 2¼% to 6%

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FOR

APPENDIX TO

REPORT OF SAN FRANCISCO WATER DEPARTMENT


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SAN FRANCISCO DISTRICT AS OF JUNE 30, 1971

| CLASS OF CONSUMERS | 5/8" | 3/4" | 1" | 1½" | 2" | 3" | 4" | 6" | 8" | 10" | 12" | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REVENUE PRODUCING | | | | | | | | | | | | |
| Commercial | 14,836 | 1,692 | 3,991 | 3,346 | 5,925 | 212 | 479 | 606 | 459 | 3 | 1 | 31,550 |
| Residential | 115,760 | 8,735 | 2,584 | 348 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 127,467 |
| Docks & Shipping | 111 | 12 | 32 | 40 | 133 | 0 | 2 | 5 | 8 | 1 | 2 | 346 |
| TOTAL | 130,707 | 10,439 | 6,607 | 3,734 | 6,098 | 212 | 481 | 611 | 467 | 4 | 3 | 159,363 |
| NON-REVENUE PRODUCING | | | | | | | | | | | | |
| Commercial | 1,235 | 55 | 106 | 91 | 84 | 7 | 14 | 11 | 11 | 0 | 0 | 1,614 |
| Residential | 1,253 | 73 | 21 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,349 |
| Docks & Shipping | 4 | 0 | 1 | 5 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| TOTAL | 2,492 | 128 | 128 | 98 | 92 | 7 | 14 | 11 | 11 | 0 | 0 | 2,981 |
| TOTAL | | | | | | | | | | | | |
| Commercial | 16,071 | 1,747 | 4,097 | 3,437 | 6,009 | 219 | 493 | 617 | 470 | 3 | 1 | 33,164 |
| Residential | 117,013 | 8,808 | 2,605 | 350 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 128,816 |
| Docks & Shipping | 115 | 12 | 33 | 45 | 141 | 0 | 2 | 5 | 8 | 1 | 2 | 364 |
| TOTAL | 133,199 | 10,567 | 6,735 | 3,832 | 6,190 | 219 | 495 | 622 | 478 | 4 | 3 | 162,344 |



| | | | |
|---|---|---|---|
| Total meters in service as of June 30, 1971 | | | 162,344 |
| Less: Extra meters in 1,366 Batteries - (3,944-1,348) | | 2,596 | |
| Extra meters in 12 Consolidations (48-12) | | 36 | |
| Non-revenue meters (temporarily shut-off) | | 2,981 | 5,613 |
| Number of Active Accounts as of June 30, 1971 | | | 156,731 |

The Above meter count includes 2,453 Fire Services.
At Dock and Shipping office, Portable Meters used on Hydrants as needed 27, 1½ and 28, 2" Meters.

| PREVIOUS RECORDS | 1966-67 | 1967-68 | 1968-69 | 1969-70 | 1970-71 |
|---|---|---|---|---|---|
| Total Meters | 162,203 | 162,613 | 162,466 | 162,334 | 162,344 |
| Increase | 82 | 410 | 207 | 72 | 10 |
| Idle Meters | 2,844 | 3,025 | 2,748 | 2,712 | 2,981 |

SUBURBAN DISTRICT AS OF JUNE 30, 1971

| CLASS OF CONSUMER | 5/8" | 3/4" | 1" | 1½" | 2" | 4" | 6" | 8" | 10" | 12" | 16" | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REVENUE PRODUCING | | | | | | | | | | | | |
| Regular Rates | 360 | 35 | 35 | 17 | 115 | 20 | 86 | 100 | 23 | 5 | 7 | 803 |
| Airport Use | 12 | 8 | 15 | 12 | 39 | 4 | 10 | 13 | 3 | 2 | 0 | 118 |
| TOTAL | 372 | 43 | 50 | 29 | 154 | 24 | 96 | 113 | 26 | 7 | 7 | 921 |
| NON - REVENUE PRODUCING | | | | | | | | | | | | |
| Regular Rates | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 6 | 2 | 0 | 0 | 14 |
| Airport Use | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL | 1 | 1 | 3 | 1 | 0 | 0 | 1 | 6 | 2 | 0 | 0 | 15 |
| TOTALS | | | | | | | | | | | | |
| Regular Rates | 361 | 36 | 37 | 18 | 115 | 20 | 87 | 106 | 25 | 5 | 7 | 817 |
| Airport Use | 12 | 8 | 16 | 12 | 39 | 4 | 10 | 13 | 3 | 2 | 0 | 119 |
| TOTAL | 373 | 44 | 53 | 30 | 154 | 24 | 97 | 119 | 28 | 7 | 7 | 936 |



| | | |
|---|---|---|
| Total Meters in Service as of June 30, 1971 | | 936 |
| Less: Extra meters in 91 Batteries and consolidations - (403-91) | 312 | |
| Non - Revenue Meters ( temporarily Shut - off ) | 15 | 327 |
| Number of Active Suburban Accounts as of June 30, 1971 | | 609 |

Note: The above Meter Count includes 13 automatic sprinklers for fire purposes.

| Previous Records | 1966-67 | 1967-68 | 1968-69 | 1969-70 | 1970-71 |
|---|---|---|---|---|---|
| Total Meters | 957 | 922 | 911 | 932 | 936 |
| Increase | 2 | 35 | 11 | 21 | 4 |
| Idle Meters | 21 | 20 | 14 | 16 | 15 |

## STREET MAIN TAPS AND SERVICE CONNECTIONS RECORD

San Francisco District — June 30, 1971

### TAPS ON STREET MAINS

| | Wharf | 3/4" | 1" | 1½" | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 16" | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| June 30, 1970 | 376 | 136,145 | 43,281 | 5,861 | 4,163 | 1,342 | 1,006 | 849 | 540 | 3 | 25 | 2 | 193,593 |
| Add 1970-71 | - | - 6,788 | 7,570 | 30 | 111 | 56 | 44 | 24 | 12 | 1 | 1 | - | 1,061 |
| June 30, 1971 | 376 | 129,357 | 50,851 | 5,891 | 4,274 | 1,398 | 1,050 | 873 | 552 | 4 | 26 | 2 | 194,654 |

### SERVICE CONNECTIONS

| | |
|---|---|
| Services connected to street mains, as above | 194,654 |
| "Distributors" being 1 or more additional meter connections to service pipes | 2,782 |
| TOTAL connections of record | 197,436 |
| Disconnected services | 37,724 |
| Net metered live services consisting of 159,363 Active meters, less 2,632 extra meters in batteries, plus 2,981 services temperarily shut-off | 159,712 |

| Previous Records | 1967-68 | 1968-69 | 1969-70 |
|---|---|---|---|
| Active | 159,588 | 159,658 | 159,622 |
| Shut-off | 3,025 | 2,748 | 2,712 |
| TOTALS | 162,613 | 162,406 | 162,334 |
| Less extra battery meters | 2,498 | 2,458 | 2,550 |
| NET | 160,115 | 159,948 | 159,784 |

### SERVICE INSTALLATIONS ORDERED

Fiscal Year 1970-71

| DISTRICT | TAPS | DISTRIBUTORS | TOTALS |
|---|---|---|---|
| Richmond | 57 | 0 | 57 |
| Sunset | 70 | 0 | 70 |
| No. Market & Western Add'n. | 199 | 0 | 199 |
| SO. Market & Twin Peaks | 240 | 0 | 240 |
| Waterfront | 0 | 0 | 0 |
| TOTALS | 566 | 0 | 566 |

| Previous Years | TAPS | DISTRIBUTORS | TOTALS |
|---|---|---|---|
| 1967-68 | 727 | 0 | 727 |
| 1968-69 | 709 | 0 | 709 |
| 1969-70 | 558 | 0 | 558 |

TABLE NO. 4

LENGTH OF VARIOUS SIZES OF TRANSMISSION MAINS IN FEET (cont'd)

| | 60" | 61" | 62" | 66" | 69" | 72" | 76" | 78" | 79" | 80" | 86" | 90" | 91" | 96" | Total Feet | Miles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alameda | | | | | | | | | | | | | | | 123,329 | 23.36 |
| Pleasanton | | | | | | | | | | | | | | | 27,432 | 5.19 |
| Niles-Irvington | | | | | | | | | | | | | | | 15,600 | 2.95 |
| Calaveras | | | | | | | | | | | | | | | 31,615 | 5.99 |
| Bay Division #1 | 102,131 | | | | | | | | | | | | | | 112,113 | 21.23 |
| Bay Division #2 | | | 26,094 | 78,856 | | | 3,867 | | | | | | | | 115,133 | 21.81 |
| Bay Division #3 | | | | | | 127,103 | | 43,184 | | | | 917 | | | | |
| | | | | | | 5,725* | | 1,908* | | | | 271* | | | 179,104 | 33.92 |
| Bay Division #4 | | | | | | 672 | | | | 147 | 365 | 90,469 | | 44,966 | 136,619 | 25.88 |
| Alameda Creek Siphon | | | | | 2,942 | 93 | | | | | | 2,972 | | 2,941 | 8,948 | 1.70 |
| C. S. #1 | 4,948 | | | | | | | | | | | | | | 90,488 | 17.14 |
| C. S. #2 | 84,317 | | | | | | | 716 | | | | | | | 102,559 | 19.42 |
| C. S. Bypass P/L | 64 | | | | | | | | | | | | | 4,388 | | |
| | 11* | | | | | | | | | | | | | 37* | 4.500 | 0.86 |
| Sunset & C. S. #3 | 255 | | | | | | | 145 | 14,491 | | | | 5,192 | | | |
| | | | | | | | | | 120* | | | | 119* | | 20,322 | 3.85 |
| Sunset Pipeline | 45,925 | 37,885 | | | | | | | | | | | | | | |
| | 105* | 67* | | | | | | | | | | | | | 84,319 | 15.97 |
| San Andreas Br. of | 41 | 5,907 | | | | | | | | | | | | | | |
| Sunset Pipeline | | 71* | | | | | | | | | | | | | 6,019 | 1.14 |
| San Andreas #1 | | | | | | | | | | | | | | | 26,618 | 5.04 |
| San Andreas #2 | | | | | | | | | | | | | | | 64,722 | 12.26 |
| Baden-Merced | | | | | | | | | | | | | | | 36,078 | 6.83 |
| San Andreas Outlet Conn. Pipes | 1,739 | 873 | | | | 1,276 | | | | | | | | | 9,781 | 1.85 |
| Palo Alto | | | | | | | | | | | | | | | 28,049 | 5.31 |
| Pilarcitos Aqueduct | | | | | | | | | | | | | | | 9,027 | 1.71 |
| Stone Dam Aqueduct | | | | | | | | | | | | | | | 7,315 | 1.39 |
| C.S. - S.A. Aqueduct | 23,218 | | | 356 | | 820 | | | | | | | | | 24,527 | 4.66 |
| San Antonio | 10,940 | | | | | | | | | | | | | | 11,050 | 2.09 |
| Sunol Pump | | | | | | | | | | | | | | | 7,867 | 1.49 |
| Sunol Plant To Siphon | | | | | | | | 8,512 | | | | | | | 8,512 | 1.61 |
| TOTAL | 273,619 | 44,803 | 26,094 | 79,212 | 2,942 | 135,689 | 3,867 | 54,461 | 14,611 | 147 | 365 | 94,629 | 5,311 | 47,907 | 1,287,233 | 243.79 |

* Tapers, Valves, Meters and Specials

TABLE NO. 4

LENGTH OF VARIOUS SIZES OF TRANSMISSION MAINS IN FEET

| | 16" | 24" | 28" | 30" | 33" | 36" | 37" | 39" | 42" | 44" | 48" | 54" | 57" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alameda | 395s | | | | | 122,934 | | | | | | | |
| Pleasanton | | | | 27,432 | | | | | | | | | |
| Niles-Irvington | | | | | | | | | | 15,600 | | | |
| Calaveras | | | | | | | | | | 30,570 | 1,045 | | |
| Bay Division #1 | | | | | | | | | 3,161s | | | | 6,821 |
| Bay Division #2 | | | | | | | | | 250r | | | 6,066s | |
| Bay Division #3 | | | | | | | | | | | | | |
| Alameda Cr. Siphon | | | | | | | | | | | | | |
| Crystal Sprgs. #1 | | 238 | | | | 115 | | | | 84,821 | | 358 | |
| | | | | | | 8* | | | | | | | |
| Crystal Sprgs. #2 | | | | 669 | | | | | 100 | | | 16,757 | |
| C. S. Bypass P/L | | | | | | | | | | | | | |
| Sunset & C.S. #3 | | | | | | | | | | | | | |
| Sunset Pipeline | | | | | | | | | | | | 337 | |
| San Andreas Br. of Sunset Pipeline | | | | | | | | | | | | | |
| San Andreas #1 | | 31 | | | | 2,334 | | | 3,150 | 21,103 | | | |
| San Andreas #2 | | | | | | | | | | | | 64,809 | |
| Baden-Merced | | | | 32,258 | | 2,260 | 1,560 | | | | | | |
| San Andreas Out-Let Conn. Pipes | | | | 5,024 | | | | | | | | 869 | |
| Palo Alto | | | | | | 28,049 | | | | | | | |
| Pilarcitos Aqued. | | | 7,480 | | 169 | 648 | | | | 730 | | | |
| Stone Dam Aqued. | | | | 501 | | | | 1,814 | | 2,106 | 2,894 | | |
| C. S. - S. A. Aqued. | | | | 103 | | | | | | 30 | | | |
| San Antonio | | | | | | | | | | | | 110 | |
| Sunol Pump | | | | 170 | | 7,697 | | | | | | | |
| TOTAL | 395 | 269 | 7,480 | 66,157 | 169 | 164,045 | 1,560 | 1,814 | 6,661 | 154,960 | 3,939 | 89,306 | 6,821 |

s - submarine pipes

r - risers

* - Tapers, Valves, Meters and Specials

(continued)

## TABLE NO. 5

## PIPE RECORDS
## CITY DISTRIBUTION SYSTEM

### WROUGHT IRON, DUCTILE IRON AND STEEL PIPE

| Size | Total Pipe in Ground June 30, 1970* | Pipe Laid 1970-71 | Removed or Abandoned 1970-71 | Total Pipe in Ground June 30, 1971* |
|---|---|---|---|---|
| 0-3/4" | 9,642 | 0 | 0 | 9,642 |
| 1 | 31,220 | 0 | 175 | 31,045 |
| 1-¼ | 3,728 | 0 | 0 | 3,728 |
| 1-½ | 124,046 | 0 | 533 | 123,513 |
| 2 | 117,081 | 579 | 2,829 | 114,831 |
| 3 | 1,839 | 0 | 61 | 1,778 |
| 4 | 3,886 | 0 | 0 | 3,886 |
| 5 | 804 | 0 | 0 | 804 |
| 6 | 1,773 | 54 | 0 | 1,827 |
| 8 | 7,222 | 344 | 5,766 | 1,800 |
| 12 | 6,967 | 34 | 0 | 7,001 |
| 13 | 678 | 0 | 0 | 678 |
| 16 | 21,389 | 573 | 0 | 21,962 |
| 18 | 2,744 | 0 | 0 | 2,744 |
| 20 | 75,919 | 30 | 180 | 75,769 |
| 22 | 25,749 | 0 | 0 | 25,749 |
| 23-½ | 2,037 | 0 | 0 | 2,037 |
| 24 | 66,165 | 10,685 | 0 | 76,850 |
| 30 | 49,332 | 677 | 652 | 49,357 |
| 33 | 2,409 | 0 | 0 | 2,409 |
| 36 | 56,596 | 0 | 0 | 56,596 |
| 37-½ | 8,896 | 0 | 0 | 8,896 |
| 44 | 22,501 | 0 | 0 | 22,501 |
| 48 | 12,818 | 0 | 0 | 12,818 |
| 60 | 26,216 | 0 | 0 | 26,216 |
| TOTAL W.I.,D.I.&S. | 681,657 | 12,976 | 10,196 | 684,437 |

### TRANSITE PIPE

| | | | | |
|---|---|---|---|---|
| 6" | 16,982 | 0 | 0 | 16,982 |
| 8" | 24,649 | 0 | 0 | 24,649 |
| TOTAL TRANSITE | 41,631 | 0 | 0 | 41,631 |

TABLE NO. 5
(cont'd)

CAST IRON PIPE

| Size | Total Pipe in Ground June 30, 1970* | Pipe Laid 1970-71 | Removed or Abandoned 1970-71 | Total Pipe in Ground June 30, 1970* |
|---|---|---|---|---|
| 2" | 23,937 | 0 | 0 | 23,937 |
| 3 | 48,232 | 0 | 0 | 48,232 |
| 4 | 501,214 | 504 | 2,474 | 499,244 |
| 6 | 2,064,864 | 9,984 | 6,125 | 2,068,723 |
| 8 | 1,734,851 | 13,799 | 2,804 | 1,745,846 |
| 10 | 4,239 | 0 | 0 | 4,239 |
| 12 | 581,133 | 8,403 | 2,578 | 586,958 |
| 16 | 346,016 | 4,058 | 2,185 | 347,889 |
| 20 | 22,592 | 0 | 0 | 22,592 |
| 22 | 15,453 | 0 | 0 | 15,453 |
| 24 | 60,256 | 0 | 0 | 60,256 |
| 30 | 4,397 | 0 | 0 | 4,397 |
| TOTAL C. I. | 5,407,184 | 36,748 | 16,166 | 5,427,766 |
| TOTAL ALL | 6,130,472 | 49,724 | 26,362 | 6,153,834 |
| MILES | 1,161.073 | 9.418 | 4.993 | 1,165.499 |

* Cast Iron and Ductile Iron Pipe are considered synonymous.

## ORGANIZATION AND PERSONNEL

### EXECUTIVE

| | |
|---|---|
| Arthur H. Frye, Jr. | General Manager and Chief Engineer |
| H. C. Medbery | Asst. Gen'l Mgr. & Asst. Chief Engineer |
| C. J. Roche | Assistant General Manager, Administrative |

### RESOURCES & PLANNING

| | |
|---|---|
| R. D. Keeley | Senior Civil Engineer |

### ENGINEERING DIVISION

| | |
|---|---|
| J. L. Bardoff | Principal Engineer |
| P. T. Matsumura | Senior Civil Engineer |
| D. P. Cooper | Senior Civil Engineer |

### CITY DISTRIBUTION DIVISION

| | |
|---|---|
| K. R. Boyd | Manager |
| J. E. Kenck | Assistant Manager |

### SHOPS DIVISION

| | |
|---|---|
| F. L. Baggetta | Superintendent |

### PENINSULA DIVISION

| | |
|---|---|
| R. C. Rosen | Manager |
| R. L. Borame | Assistant Manager |

### ALAMEDA DIVISION

| | |
|---|---|
| C. L. Hughes | Manager |
| G. J. Caccia | Assistant Manager |

### WATER PURIFICATION DIVISION

| | |
|---|---|
| H. W. Tracy | Manager |

### COMMERCIAL DIVISION

| | |
|---|---|
| T. P. Kearney | Manager |
| F. Frery | Assistant Manager |

### AGRICULTURE & LAND DIVISION

| | |
|---|---|
| F. G. Loskay | Manager |

### ACCOUNTING DIVISION

| | |
|---|---|
| J. W. Madden | Chief Accountant |
| F. Rachok | Head Accountant |

## R E T I R E D

July 1, 1970 through June 30, 1971

During this fiscal year, the following employees were retired from service and recognition is given to their faithful service in the organization:

| Employee | Classification | Years of Service |
|---|---|---|
| Clark Allen | B 512 Clerk Typist | 29 |
| Fred Andrade | 7514 General Laborer | 25 |
| Oscar Braunewell | 7514 General Laborer | 24 |
| Wilfred Chaffee | 7316 District Water Serviceman | 32 |
| John Curto | 7284 Utility General Foreman | 37 |
| Oris Dominques | 7328 Operator Eng. Universal | 11 |
| Homer Hinnen | 3416 Gardener | 9 |
| Arthur Landau | B 222 General Clerk | 19 |
| Maria Lavoria | B 512 Clerk Typist | 12 |
| Alfred Lenzio | 1656 Head Accountant | 6 |
| Albert Maracci | 7316 District Water Serviceman | 29 |
| Kathryn Martin | 1444 Clerk Stenographer | 4 |
| Daniel McCook | 5364 Sr. Civil Draftsman | 20 |
| Walter Newlin | 7250 Utility Foreman | 27 |
| Adele Ormsby | 1446 Sr. Clerk Stenographer | 29 |
| Evans Robertson | 7328 Operator Eng. Universal | 16 |
| Herman Von Bremen | 7316 District Water Serviceman | 41 |
| Winifred Wood | 1426 Sr. Clerk Typist | 23 |
| Edgar Wooden | 7344 Carpenter | 12 |

## I N M E M O R I A M

| | | |
|---|---|---|
| Frank Armstead | 7514 General Laborer | 10 |
| Charles Helmer | 7317 Sr. District Water Serviceman | 11 |
| Aniela Hogate | 1424 Clerk Typist | 6 |
| Emil Wihler | 7316 District Water Serviceman | 29 |